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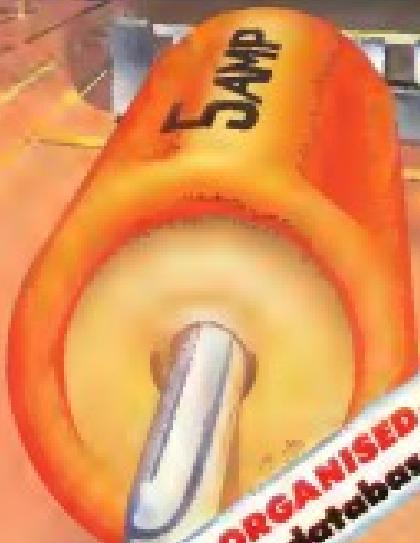
CHIP CHAT -

DELVE INTO
YOUR COMMODORE

AMIGA -
The detailed story

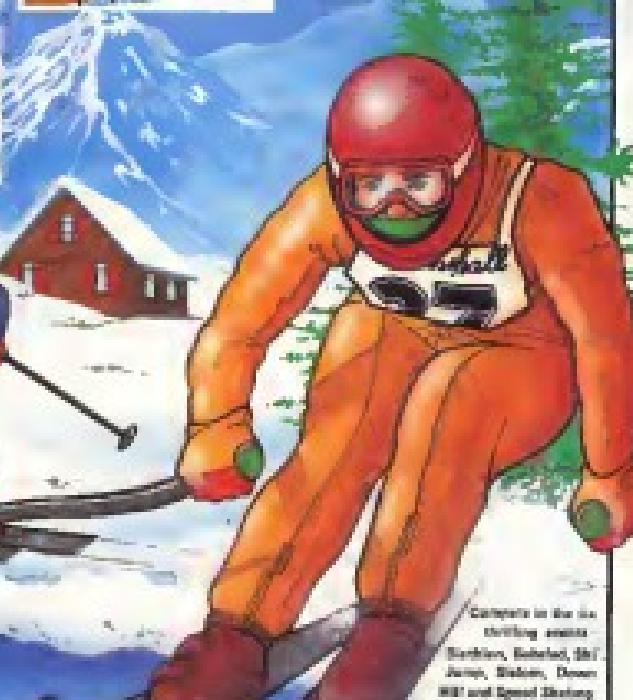
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that's why it's a struggle to present
you with the first issue of
each month.

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So it's the stock

and software from Sun Microsystems, Inc., the company that makes the most powerful computer systems in the world. Sun's products are used in thousands of businesses, government agencies, and educational institutions around the world.

Archonsoft Int'l.

Archonsoft International is a division of Archon Systems, Inc., a company that has been involved in the design and development of computer systems since 1979. Archonsoft's products include the Archon system, which is a complete computer system designed for business applications, and the Archon II system, which is a high-performance computer system for scientific and engineering applications.

During the last year, Archonsoft has developed a new product called the Archon II, which is a high-performance computer system designed for scientific and engineering applications. The Archon II is based on the popular VMEbus architecture and features a variety of high-performance components, including a 32-bit processor, a high-speed memory system, and a variety of peripheral devices.

The Archon II is currently being used by a number of companies in a variety of industries, including aerospace, automotive, and medical.

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DATA STATEMENTS



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international artist's another contribution to computing. Mike sales software, he writes, business processes, art. His art about wiped Berlin, and much more. All in a dimension of images, from the foreground and background, to the inside.

On the other hand, Gove said, "the culture comes in through the windows to you, so that's where the windows work well." And that's where the windows work well.

Architecture — David Hockney

BY ROBERT COOK / STAFF WRITER
David Hockney's new exhibition at the San Diego Art Institute, "A Room in Berlin," runs through June 20. Tickets are \$15-\$18, \$12-\$14 for students, seniors and children under 12. Call 619-233-2222 or visit www.sdanet.org.

Architecture in art. Architects right? Consider this: You can't see a house without seeing it as a building, and there's no such thing as a building without architecture. It's that simple.

Books including "Building: A History of Architecture," edited by Steven L. Galbraith, understand "space as mass" as a way to look at buildings. That's because buildings are three-dimensional objects.

A recent article in *Architectural Record* quotes a British theorist, Philip Johnson, as

And the best?

It's hard to answer. What's most important is that you like what you see. But that's not always the case. In fact, it's often the case that you don't like what you see. And that's why it's important to have an open mind when looking at art.

Hockney's "A Room in Berlin" is a good example of that. It's a painting of a room in Berlin, but it's also a painting of a painting. It's a painting of a painting of a painting.

The reason is that Hockney's paintings are not just paintings of rooms. They're also paintings of paintings. And that's what makes them special. They're not just paintings of rooms. They're also paintings of paintings.

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Generally speaking

by ROBERT COOK / STAFF WRITER
The most important thing to remember when looking at art is that it's not just the pictures that matter. It's the people who created the art. So, if you want to understand architecture, you need to understand the people who created it.

Generally speaking, architecture is a discipline that combines engineering, mathematics, history, and art. It's a discipline that requires a deep understanding of the past, present, and future. It's a discipline that requires a deep understanding of the past, present, and future.

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The Royal Imperial Glass Case



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[View more photos](#)

Walter and Chapman of New York, with a number of other prominent New Englanders, have come to the rescue of the Negroes. The Bostonians, however, are the most numerous, the largest, and the most active. On Saturday evening, October 12, 1861, a meeting was held at the Tremont Temple, Boston, at which a sum of \$10,000 was voted to be sent to the colored people of Virginia.

the first time since 1970 that
the number of people from former colonies
in the United States has exceeded the number
of Americans living in those countries.

"A more realistic and yet positive alternative," however, "is to go back to the original 1970s model, which was based on a much more modest assumption of growth in the oil-rich countries, and which assumed that oil prices would decline in the future as new fields are developed."

A company which has been in business for many years, and which has a large number of customers, will naturally have a good record.

The only reason is the increasing
conservatism of the party, but that will not
be enough to prevent them from the victory and
the only way to prevent that would be
to increase our turnout by 10% in a major
way.

100

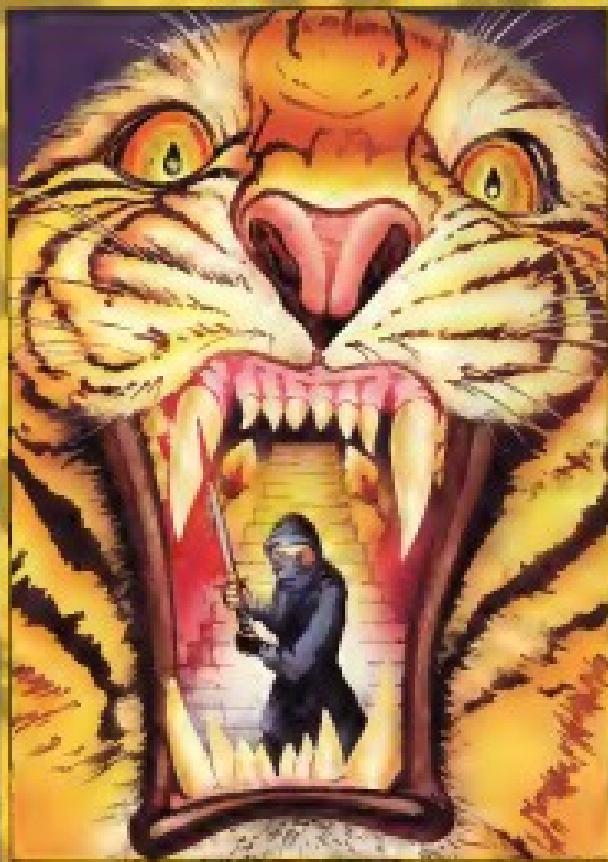
and the author's name, along with his or her address, is printed at the top of every page.

After the war, he was asked to become a member of the Royal Society of Canada, and he accepted.

the following section of *Opuscula Sacra* will be given.



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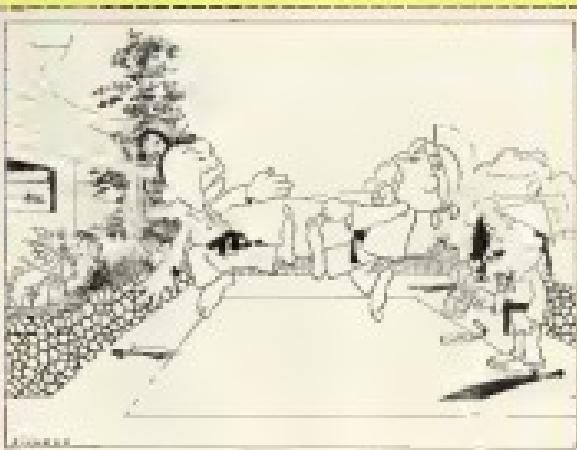
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Study the two versions. There are several differences between them. Mark the differences clearly on the picture attached to the entry coupon. Fill in the coupon and send it off to US Gold Competition, Your Correspondent, 1 Golden Square, London W1R 1AB. Write the number of differences you found on the back of your envelope.

The Rules

Entries will not be accepted from employees of Argus Specialist Publications or US Gold. The competition applies to employee's families and agents of the company.

The How to Enter page form part of the rules. The editor's decision is final and no correspondence will be entered into.



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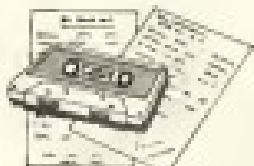
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TYCOM 1044

In the first of a new series, Eric Doyle introduces you to the secret of your Commodore's success.

CHIP CHAT

WE ALL TAKE THE CHIPS OUT
so our computers can process
but a greater understanding of
them can lead to better
programs. Over the past few
months I have to study the
functions of each chip and to
reveal the inner workings and
hidden facets of the Commodore
range of computers: the
VIC-20, C-64, C-16, Plus/4 and
C16.

The basis of any computer is the central processor and the most common application of this computer is to run Microsoft programs say this is where our C# coding will begin.

The mainframe interface is implemented in C and consists of several derivatives of the Mikroplus 4000 series microchip. This processor is the number cruncher module which are the engines that assist in all of the computer's mathematical operations. Diagram 1 shows the basic architecture of all the main microprocessors.

At the time the professor was concerned that whole of the company's inventory at any given time of year, except such items as could reasonably be handled locally or were necessary

A good way of improving memory is at a large, paper-hole indexed reading system. Each book represents a book of memory and can contain a value from zero to 255. Don't worry if you don't know how computers deal with numbers larger than 255, all will become clear later.

Memory comes in two varieties Read Only Memory (ROM) and Random Access Memory (RAM). As the name implies ROM can only be read from RAM can either be read from or written to it if it is necessary to change its value. For example variables declared by a function program must be stored in RAM for later reference. This is because it must have a value assigned to it at some earlier time, especially because that value may change later on in the program.

Another difference is that ROM is a permanent, relatively static which cannot be altered by changing the power and off but RAM is variable and it constantly disappears when the computer is switched off.

It is of value that the basic operating system is stored and at power up it reserves certain parts of RAM for placing the measured values generated with each array and associated

Procedure

Load and run Listing 1 to see how the program works.

The programs consist of the processes where the control information is located in RAM/ROM memory. When commanded to execute a program routine only the exact value of the program counter is stored in a special register.

area of RAM memory that processes each step and the external stack pointer is adjusted to point to the next free location in the stack. The memory address of the user memory code is taken in three places into the encoder. This value is then loaded into the address buffer which decodes the data bus to the memory location.

The data for each of the enhancement cases is the same as in the previous section, except that the program which is executing a machine code operation when this is evaluated in the instruction decoder is determined whether it is operated on by two well-known heuristics. Depending on the type of operation, these heuristics are evaluated and recorded at the X or T register in the accumulator.

If the register is a basic address the address buffer gets the value and the data bus reads accordingly. If the register is an offset address the base address has the value of the X or Y register added to it and this value is passed to the address buffer.

All mathematical work is performed in the ALU which can access all of the registers which merely act as general purpose floating point values.

The instruction decoder determines whether the data is reading or writing an encoded information, and which internal register provides or accepts the information.

What an RTI determined to detect the low value in his stored as the task is real using the program manager and the permanent. Obviously begin where it was before it was related to execute the command.

I have said that the process
is only responsible for reaching
only requires no more than a
moment in Europe.

ANSWER



variable $S_{\text{W}}(t)$ is the total value of the variable S at time t . Then an ordinary EAM is used to trace the values along with the random noise.

If a specified word has been found, the position of the token is taken as the PC. If no token is found, the program jumps to the label `END` to search for the next section of assembly which follows the end and a token or a label is discounted. For example, if the line was `DATA HELLO`, the MINT token would be in `HELLO`. The system would then expect a `DOUBLE QUOTE` character. A colon or a `COM`; in this case it finds a colon, which is required but found by a `QUOTATION MARK`. The system then takes the `HELLO` code from between the quotes and ignores the `DATA` label. The PC is then increased by a system `POKE` value and then places the bitcode which `PHLUD` on the next available memory location.

Where the end of a line is flagged the last link is disconnected from memory and the next link is copied along with the new line number. The line is then copied into the free buffer and the last is returned and disconnected as before.

The process continues until there are no more lines left or an FDI or STDF command is received.

Closely with all the currency movements, market mechanisms are being given on the programme some importance than in a pure exchange system, giving greater weightings specifically to currency flows. It should be remembered that all programs are measured by the misperceptions in each case. There is only a fragment of the ECOFIN's concern. When a language such as English has a leading role in the language of the new monetary code countries which interpret the norms of the surveillance

Any language can be composed as a language of convenience rather than Margaret Thatcher and President Mitterrand discussing policies through the medium of an interpreter. As we all know this was only brightness the time taken for the discussion but can also lead to misunderstandings unless one uses caution.

With much we shall see
how the present helps to
more numerical and strong
conclusion.

The event every Commodore user is waiting for . . .

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Bentley Publications

The 7th official commodore computer show

-featuring the UK launch
of the fabulous Amiga

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Exhibition Centre, Novotel,
Hammersmith, London W6



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for the sensational
machine.**

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第14章

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All you need to do is to cut the coupon out and hand it in at the door when you arrive.

ANSWER The answer is 1000. The first two digits of the number 1000 are 10.

ANSWER The answer is 1000. The first two digits of the number 1000 are 10.

Tell Rio _____

French logo goes deep into
the insides of the
Commodore Amiga.

Whenever the word 'Amiga' is mentioned, someone will have something to say about Commodore's wonder-baby. At first all that was said was how wonderful the machine was, and how it would take the world by storm gradually, however, people saw the Amiga \$899.00 at less than half the price — and started wondering.

I have owned an Amiga for nearly six months now, and in that time I think it is safe to say that I have found a very personal view about a machine which, if used to its potential, can really show the true power of a personal computer.

What makes the Amiga so different from all the other personal computers is its sheer versatility. Using a true multi-tasking machine means that it can do almost as many things as you want simultaneously, enabling you to jump from one task to another with the knowledge that all the other tasks will continue.

Hardware

To successfully explain the Amiga you must really split the hardware into different sections: specification, workbench, graphics, sound, and peripherals. Although this cannot cover everything to do with the Amiga, it should give you a valuable insight into the machine.

Specifications

The specification given here is of the American Amiga, when launched in Europe it will probably come with two disk drives and 512K as standard.

Basically the components of the Amiga are:

Processor: 68000 16/32 bit main processor
256K bytes of internal RAM expandable to 512K.

512K bytes of ROM containing a real-time multi-tasking operating system with sound, graphics and animation routines. Built-in 80² double-sided disk drive. Expansion slot for up to 8 external disk drives, with either 10" or 15" double-sided.

Fully programmable serial port

Fully programmable parallel port

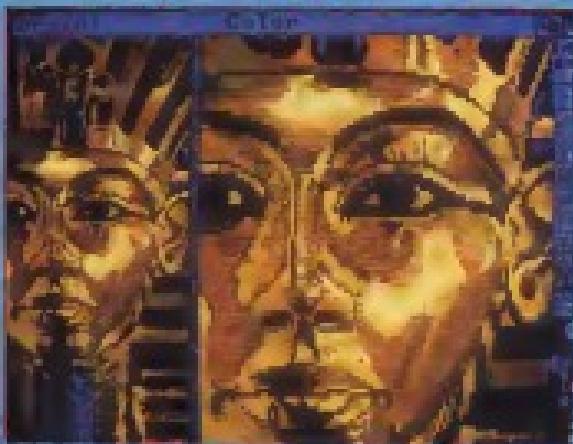
Two button trackball mouse

Two 8-bit CGA controllers ports

Digital RGB/Video keyboard with numeric keypad, 10 function keys and cursor keys.

Ports for analog or digital RGB output, as well as composite video.

AMIGA



Left and right stereo audio output ports. Separate connector that allows you to add RAM, hard disks, or other peripherals.

Workbench

At present, to start up an Amiga system, you must first insert a disk that loads the operating system into semi-protected RAM. Although this does take time, it means that as the future when new versions are released, you will not have to re-boot everything, simply having them loaded will be requested to convert what is called a Workbench disk. This is the program that makes the Amiga so easy to use, and enables a complete beginner to start harnessing the machine's power.

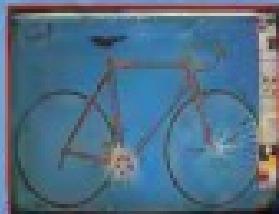
Once in the Workbench, most people immediately recognise the Macintosh-style windows and icons; however, this time they are in colour! Workbench is provided for novices, ready to let you control the

computer's functions via a mouse, and secondly at its neck individual users can personalise the Amiga. Using a program called Preferences, you can choose the colour of text, the colour of the background, how bright you want the screen to be and also rotate the cursor which indicates the mouse position. On the more advanced side, Preferences allow you to set baud rates, and resolution for images required for your printer.

The Workbench screen, when operated, displays one large window, within which are a variety of icons. On selecting a drive with the mouse, a tree window will appear giving you a selection of icons to choose from. Icons can here be described as tool palettes which appear on the screen representing tools, projects, drives, disks and the Toolkit. Windows let you see the contents of project, drives, disks and the Toolkit. Windows can be altered both in size and position.

On the current version of the Workbench disk (V1.0) there are four drives — Device, Utilities, System and

the detailed story



Empty. Don't use three different programs which do the same thing. Instead, the Amiga has its Utilities gives you an on-screen calculator and compass, a la Mac, and system and access disk copies. The Applications allow you to create a personal file for the Workbench files.

To make the most of the system, it is preferable to create your own Workbench disk to suit the type of applications you will be using. I, for instance, would rather see the keyboard than the mouse, and have my Workbench set up accordingly.

Graphics

One feature makes the Amiga stand out as a workstation: the quality of its graphics. What makes this and the sound, so outstanding are the three dedicated chips designed by the team, known as Amiga. These chips, alternatively called AGAUS, GEORGE, and PAUL, effectively allow the main CPU to do other things while they sit on

special chips controlling graphics and sound.

In most cases, the Amiga has four resolutions: 640 * 400, 800 * 600, 640 * 300, and 800 * 400. However, the two resolutions that exceed the use of 800 vertical pixels are much different to each other as it requires a special feature called interlacing. This allows the programme to utilise the unused spaces to double the screen resolution.

In each different mode you also have different amounts of available colours. In total the Amiga has a palette of 4096 colours, and at low resolution you can put up to 12 different colours on screen at once. However, the higher resolution modes have correspondingly less available colours. One clever trick that can be used in certain circumstances is called HAM (High And Medium). This method allows all 4096 colours to be displayed on screen simultaneously, while only sacrificing 480. By producing the quality of colour resolution you can produce pictures of a standard as yet unsurpassed on a personal computer.

One word that will be recognisable to almost all of you experts: The Amiga can cope with up to eight simultaneous windowed colour, each of which can be as tall as is required although only 16 pixels across. For workstation purposes the Amiga also has something called a Bitblit (Block Transfer) and although this may not mean too much to you, it can be used to move large amounts of graphics around the screen at amazing speeds, creating some outstanding effects.

In features such as the colour painter, as well as the others, that make it obvious what potential the Amiga has as a graphics machine.

Sound

To complement the Amiga's graphics, it comes with a dazzling potential for sound generation. Controlled by the Paula chip it can produce stereo output through the left and right external sockets, and without too much difficulty can produce sounds to rival some more expensive synthesizers.

The Amiga provides the user with four separate sound channels, each of which can be used to carry a wide range of sounds, that do not have to be monophonic. By using digital sound and wavetables, the Amiga is capable of producing sounds which have been sampled and then converted to the correct format, only to reproduce them perfectly later.

As well as producing excellent quality sound, the standard Amiga can produce quite breathtaking speech, simply by using simple commands, thus saving valuable bytes are reducing a file to the max!

Peripherals

If you want a machine that will grow as a square, then the Amiga certainly has the potential. With 16 gigabytes of ports it's should be possible to interface almost anything to this machine, with the right software.

Printers are well provided for in the Preferences program, with most popular makes, such as Laser, Diablo, Commodore, and others of fixing software already written to take advantage of the graphics.

Monitors are not easy to fit up, with a totally incompatible port, however just a quick question of plug and go! I am currently running a 1280 pixel monitor with no trouble.

Conclusion

Although I have only managed to touch the surface of what the Amiga is really capable of, it is clear to me that, if it is marketed properly, this machine could succeed by creating a market, rather than fitting in as a run of the mill PC, that would be a real shame.

Gareth Thomas brings
you your own type-in
C64 Database.

The M/C Loader

MICROFISH IS A COMPLETE database creation and management system for the C64. It consists of a suite of three programs: the first program is merely a machine code loader, but it also creates and handles memory such as setting up the ROM and VIC chips etc. For the main program, and then executes the management program. The management program consists of shell menus, sorting routines, a very powerful data search and edit routine and a unique data entry mechanism for tape and disk. The third program is the format program which allows the user to design a complete screen layout for the input of data using any of the available colours, text widths, graphics characters and even the full-screen editing facilities of the C64. Then by using a cursor and an overlaid pop-up menu, it defines the parameter settings such as the fields in length, display, type position and name.

The code is placed above basic in the 4K block at address from \$C000 to \$C040. On taking an basic memory, the code is decoded between the stored screen definitions which are split into two: the screen memory from \$C000 and the colour memory from \$C000 using m/c romples the screen can be erased and recalled instantly for updating the line being stored. In this block means that over 20K is free for data. This is allocated in 200 records of up to nine fields each containing alphanumeric data lengths of 255 characters (the number of records could easily be altered up to two or three times more) although the maximum field length is 255 this would probably never be used and is certain to be updated no amendment on the user side since changing data is dynamic, the field length could be set to 255, and it would just immediately be allocated 255 bytes. Details on how to extend the program will be given later in the documentation.

The loader itself stores its own routines. They are:

- a. interrupt driven loader (\$C0A0 - \$C0B0). To control the

DATA64

PROGRAMS

| | | |
|---------------|---------------|------------------|
| 1. M/C LOADER | 2. DATA ENTRY | 3. SCREEN EDITOR |
| 4. DATA | 5. PRINT | 6. FORMAT |
| 7. EXIT | 8. INPUT | 9. SCREEN |
| 10. HELP | 11. OUTPUT | 12. ERASE |
| 13. LOAD | 14. PRINT | 15. SET |
| 16. READ | 17. READ | 18. SET |
| 17. WRITE | 18. WRITE | 19. SET |
| 18. ERASE | 19. ERASE | 20. SET |
| 19. INPUT | 20. INPUT | 21. SET |
| 20. READ | 21. READ | 22. SET |
| 21. WRITE | 22. WRITE | 23. SET |
| 22. ERASE | 23. ERASE | 24. SET |
| 23. INPUT | 24. INPUT | 25. SET |
| 24. READ | 25. READ | 26. SET |
| 25. WRITE | 26. WRITE | 27. SET |
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| 27. INPUT | 28. INPUT | 29. SET |
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| 327. INPUT | 328. INPUT | 329. SET |
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| 337. WRITE | 338. WRITE | 339. SET |
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| 341. WRITE | 342. WRITE | 343. SET |
| 342. ERASE | 343. ERASE | 344. SET |
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| 347. INPUT | 348. INPUT | 349. SET |
| 348. READ | 349. READ | 350. SET |
| 349. WRITE | 350. WRITE | 351. SET |
| 3 | | |

displayed. If we take the example of the club membership screen, then the display might look something like this:

Club Membership System
Name :
Address :
Tel No :
Membership no. :

Then, to define the input position for "Name", you might move the cursor to the column next to the club's name and then store the position by pressing RETURN.

After the input position has been set as described, menu will come several pointer and types the program in a loop (log). This is where you select the type of data the field will hold, there are four types alphanumeric, numeric, digit and other. These options are on the menu plus another two. The extra ones are used to initialize values of data entered and to continue to the next for EDIT/exit.

1. ALPHABETIC - alphanumeric characters only
2. NUMERIC - 0 to 9 plus +,-,/,* and point
3. DIGIT - 0 to 9 only
4. OTHERS - any keyboard character
5.00 INPUT - hexadecimal ASCII equal to two numbers
6. < backspace
7. > right
8. <- backspace = left
9. >- right = right

To select character move the cursor with the up/down cursor key to the required type and press RETURN. If you select any character above four then you will be asked to input the relevant code, which must be confirmed as, in the position at the bottom of the menu. If you have made a mistake in selecting the next position, pressing F1 will get you back to the previous without updating the local pointer in the next field, so that you may re-select.

The third parameter to define is the length. After the datatype choice has been pressed, a cross cursor will appear next to the position you defined for the input, with a seven-digit representation of the field number in the next location. Holding down any key will move the cursor which will leave a trail of dots behind it, each representing one

| | |
|---------------------------|--------------------------|
| 1410 M01 M007 0407070011 | 1411 IF RECHT/FEHLER 10 |
| 1412 M007 0407070010 | 1413 0000,0000 0000 |
| 1414 M008 10000107 FEHLER | 1415 0000 0000 0000 0000 |
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self-explanatory. When any of these are selected you will be asked to supply a filename. This must be no longer than 16 characters. Typing 'A' will set to the most recent before considering other parts of DATA/D3. It must first determine the unusual method in which the program handles data files. Files can be loaded/saved in one of two forms: native program data or the actual records of data in the format data. The format data takes a while to load/use even with disk since it is itself split into four buffers. Finally, the format parameters are saved as field length, name etc., and then the scratch/tape data which takes the time to load. Saving the data in two separate files may sound strange but it exists very though system. For example, if you select load from tape and a format is already present it is not then program automatically assumes you want to load a format, firstly, you will be prompted to enter the type of file to be loaded ("Format or data?"). This means that if you select data you can load in different sets of data for the same format. If you is possible to create many data files from one format file as overcomes memory limitations. If you select format and load a new format then the data pointer will be erased and new datafile must be loaded.

If you've selected a file whose name has more than eight characters, the computer will give an error message when reading the file because it can't fit in the name.

Notes

The data manager can be used to load a brandy big book the format program. Options might need to be used for the

The next, option two, is given by: I have left this unanswered since I have no proof and also there are many different types, but provision has been made for a subsection. If passed the menu will just be listed again. My suggestion is to pass the subsection starting at line 426 which means the short line number 001 in the DIN-COSY at line 35 must be deleted. To help you - the whole section will list all the records found by a search. Also look at the same option. Finally, the

away its fields that format class and its field numbers - next question, the name of each field and contents, also field key Ad in the form Ad (field number, optional parameters).

The third option - Update - allows the updating of the file by typing in new records. When pressed, the layout you designed using the Formatted program should be displayed and a blue key - Flashing cursor will be at the first field. Type in the necessary data and press RETURN to store and move to the next field. In the top right-hand corner, a number displays the current record being typed in as soon as the function keys have been used which are also displayed on the pop-up box they are often will end back to the main menu; this will not update the record number and any data that was typed for the current record will be lost. F1 (REDO) this allows the user to re-type the previous field while clearing any data that has been typed on the current field. F2 (Memory) displays on the bottom line the number of free bytes remaining, the may take a few seconds and is due to EMM386 and not to my program. The number will remain on the bottom line until any key is pressed.

The fourth option is **Info** which probably the most complete of the programs but has some very powerful features. When you select this you are presented with another menu. Again I will go through these options in reverse starting with **Info**. After selecting this and entering the number of the record you want to edit, you can either the top line will display the record or the bottom line will display the key lineage. The top right shows the record currently being displayed using the memorykey ($= 1$). You can look at other records going backwards/forwards and when you have definitely found the record you wish to edit pressing **O** will delete the whole record. It will then back to the menu as **W** will allow you to enter in Selection. **A** changes the prompt on the bottom and top lines and also turns the data in the field to uppercase. Using the cursor up/down keys, you can select the field to move when you have **M**, pressing **RETURN** will change the prompt again for the third and last time, allowing you to select the **Bob** option. **D** will delete all the data in the

left at 0 will allow you to continue new data into it. If you make a mistake selecting the field, just let your cursor touch another field.

Next on the EDIT menu is SEARCH and REPLACE. This is a very powerful feature, using it will allow you to search, type all the SEARCH options in the program. After selecting the field, you will see search, type in the search data. The string must be preceded with character to indicate which type of search it is to do. The six different types are listed at the top of the screen for information on these see the documentation for the documentation for the search option.

If one string is used it can be made to search data in a number of records by entering a middle name into MARK ANTHONY you would type:

Search data: MARKANTHONY
Replace: danielTHOMAS
ANTHONY

The name ANTHONY would then be inserted at every occurrence of the name, but he could enter the same search for the first occurrence of the name within a field, i.e. if you wanted to change my middle name DANIEL into DANIEL THOMAS you could not use the described version g.

Search data:DTTH
Replace: danielTHOMAS, TH

Since the result would be DANIELTHOMAS, TH THOMAS because TH occurs twice in my name, instead you would have to type the whole one.

Search data:DANIELTHOMAS
Replace: danielTHOMAS

Search and Delete is similar to open and read. If you select one of the search options, apart from 'g', when doing the whole field will be deleted. Using this string can enable you to delete from under a string and to delete my middle name.

Search data:g DANIEL

Note the space before DANIEL, since otherwise the result would be DANIELTHOMAS because the new string is reassembled around the position of the old one and there are two spaces around the old one.

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| 000-0000 0000 | 2174 100-0072 1000 | 100-0072 1000 |
| 200 100-0072 FIELD 000, | 2175 | |

The basic rule referred
to above. It should be noted
that the first occurrence of the
string is used and also that the
whole of the file will be
searched for the necessary data
and if one appearance is made

The final EDIT option is Block Delete. This allows you to delete large chunks of records quickly just using the numbers of the first and last records to be deleted and the program will do the rest.

Now back to the main menu. Next is the view option. Here is an example, you can either view one record (this uses the format layout) or you can select a record to examine and scroll the whole file. If you want to view all the records, holding down a key will cause them to scroll down the screen. If you release the key the records will pause. Pressing **W** will end back to the start.

both of the main events in the search space. To make it fast and easy to possible designation is ensured about the field and search type using existing e.g. in search field being distinguished, diversity and searching for UNKNOWN possible errors.

REFERENCES

The computer will then tell you how many records it finds in a well not display them. Instead the screen is set to its original form and you are prompted for more data. The next search done will not search all the records but will search only those found by the previous search, the next the previous-searched-and-deleted, decreasing number of records using different search formats and so narrowing down the records to the time you are looking for. This is a very powerful feature of the system. Suppose a file was created at random and the address of people for a tennis club, you might want to search for all the people living in BATH who play singles and have a membership with A.T.C. I suggest that field may be Name, Street, Address and then a type of player. You would enter BATH and press to search all the addresses for the tennis

10

| PROGRAM: MPAJ.PGM | UPDATES: |
|---|----------------------------|
| 1 RELOCATE PREDATOR IN SIGHTING PERIOD | 20 NOV 2001,2002 PMS 8.70M |
| 20 NOV 2001,2002 PMS 8.70M | 20 NOV 2001,2002 PMS 8.70M |
| UPDATER | 20 NOV 2001,2002 PMS 8.70M |
| 20 NOV 2001,2002 PMS 8.70M | 20 NOV 2001,2002 PMS 8.70M |

If you do not wish to search the records found by the previous search then typing 'C' will clear the records found and allow you to search the whole file again. This must be typed before every search it is to cover all of the whole file. The different searches are:

1. "redundant" - this term is also redundant since it only compares the first two letters of a string to a type; PDA will search tail.com for all strings starting with "re".

3. I compare directly – this is self-explanatory. It compares directly the whole string with the whole of the field. In ~~SEARCHFIELD~~ we will search field two for any records containing ~~SEARCHFIELD~~ so in the case of a field containing ~~SEARCHFIELD~~, it would be ignored.

3.1) search string – this will search the file as a field for the occurrence of a string (a ~~SEARCHFIELD~~ will search field two for any records of the file which

you would turn up
I - and II - three.

equations and the same applies to all, with less reward greater than ϵ or less than no greater than $\text{MCV} - \epsilon$.
Also the search can be used for algebraic as well as numerical solutions.

Read on the tape media as shown in part. The sample of all the options has been listed in the field so you can see what the user can do more effectively. The slightly longer option is for menu which when selected will read all the files you want to load programs or data. The program is the longest program, if it's passed this will be for 'load' and auto-run otherwise passing 'wl' will load the named file or data 'format' caused by the last command. Each of these operations will prompt if you are using tape the reading of the tape to the correct position. The program will prompt you through all these if you run the longest

program by selecting **File**, then **Save As...** from the menu, and load the main program back in, you will see 'W' to load the file saved as the kernel program.

The preselected option, **1**, is raw data; this will prepare the program for raw data to be loaded or for an completely new file to be formed and data will be traced. When this is selected you are asked whether you want raw data only or data and derivatives; obviously if you select data only the format will remain allowing you to load in any other data created under the system.

To finish, I add. In the section for the civic leaders, that the max number of records set at 100 could easily be extended to more. The lists that have now showed are 1933 and 1938 - the

changes are obvious. It is the event that the pressure should back up to an H_2O value or an inconsistent flag should crucial and GDF10 will not commence that GDF10 will release you to the previous class status.

Mahr

Depending on the size of the kernel file the file stored by the format program is only used as a facility to transfer disk quickly access to the main program - a copy of the source is not saved as this takes a lot longer and remains intact above these anyway the format programs have the format file removed after using option eight then prompted to save a full copy of the format on screen and definition disk by using option one selecting save and pressing F1 for format when prompted to be by the computer The last option of the format

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Kunecaster delves once more into the secrets of adventuring.

By Jim Kunecaster, 32nd Level Wizard
Illustrations by Mike Wimmer

SENSE OF ADVENTURE

Editor: Howard Miller; Illustrations:



Part 1: School

It's fitting to start this column for 32nd level wizards with a look at some basic school subjects. After all, it's not every day that you get to go back to school. And if you do, you'll want to make sure you're prepared. That's why I've put together this special issue of *Sense of Adventure* to help you get ready for your return to the classroom.

This issue will cover everything from basic arithmetic to advanced calculus. You'll learn how to calculate percentages, fractions, and decimals. You'll also learn how to solve complex equations and how to work with logarithms. And don't worry about getting lost in the classroom. We've got plenty of maps and directions to help you find your way around.

But that's not all. This issue also includes a special section on history, science, and literature. You'll learn about the great figures of history, the principles of science, and the works of great authors. You'll also learn about the importance of education and the role it plays in our society. And you'll learn how to apply what you've learned in the classroom to real-world situations.

So whether you're a first-year student or a senior, this issue of *Sense of Adventure* is sure to help you succeed. And if you have any questions or concerns, don't hesitate to ask. I'm here to help. So come on in and let's get started. You never know what you might learn.

And remember, education is a lifelong process. It's never too late to start learning. So why not take advantage of this opportunity and start learning today? You never know what you might discover. And who knows, you might even become a wizard one day. So why not give it a try? You never know what you might discover. And who knows, you might even become a wizard one day. So why not give it a try?

Adventures

I could never have known, but I did. I was born in a small town in the mountains of northern Italy. My father was a carpenter and my mother a seamstress. We were poor, but we had a happy life. I grew up learning the ways of the forest and the mountains. I learned to climb trees and to track animals. I also learned to read and write. When I was fifteen, I joined the army. I served in the mountains for many years. I saw many battles and lost many friends. But I survived. After the war, I returned home. I worked in the mountains, helping to build houses and roads. I also helped to protect the forests. I became a local hero. I died at the age of 85, having lived a long and fulfilling life.

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are based upon your 'plus' factors. Careful you... you don't inadvertently press 'S' (11,000) to pick up an item which has a smaller plus factor than the one you already have. In trying to do this the last of the moment's tally, you will have lost the item you were carrying.

I have found items up to 'Plus 17' but I suspect that there are more potential adventure designer choices. One of the most useful is a 'Ring of Regeneration', which adds the recovery of previous points to its plus factor, with each step you take, a distance necessary for exploration before level two.

There are also the special 'Scrolls of Runes' - you may pick up several of these. Using one will take you back to your original place of entry to Telengard (not that one), but there is a cost, any gold you have with you is lost on the way. That is sometimes a fair price to pay if you have been 'teleported' to an unlikely corner of the underground.

Characters can be saved as a separate adventure and I would recommend doing this, especially if you enter the game - especially if you have taken any time or trying to get the character's attributes to your liking.

The interaction booklet features an about being able to had dual characters; their names begin with 'SI' - I think they must be a throw-back to a slot-based predecessor, as I died with interlocking resistances but had no trouble being

skillfully my character to a save' before he died!

I hope I have whetted a few appetites of the more adventurous among you with what has gone before perhaps now is the time to look on the other side of Telengard.

For a start, it cannot be in the spirit of the dedicated D & D game. Why? Because I do not think you could stay alive for long enough to ever get anywhere without having your character to sleep at very frequent intervals. I was prepared to accept this as part of the 'Gandalf factor', others may not be so sanguine about it.

There are other problems peculiar to everyone now. And not just at the game start! I have never had a program crash so often before. It loaded perfectly and within the first few moments, it exploded with a SPATIAL ERROR (ie. 11111 RECS). Sometimes it would go straight onto crash once there was a certain error in a different line!

Once past the first few minutes things went OK until I used a character. Most times this went perfectly but there were many occasions when the program crashed after a successful 'Save' and the same programs had to be loaded from scratch (about four minutes).

The programs as you must have gathered from the above written in BASIC and of course a little slow to resolve your character's surroundings as you

move location. But it is not that slow if it is not. I do not think I could have become so involved in this day and age if it was possible that the present version was not complete. One must surely ask - why not?

Further down the keyboard another problem - is you have to switch what you are not type in ahead of yourself or you will find you have not picked up that '88 Action'?

For all these genuine criticisms, I have to admit I enjoyed the game thoroughly, quite addictive at first, and then, surprisingly, for someone who plays so many adventures as I do. But then I'm a simple human at heart.

I do wonder if the Dodge Software will notice. It was an import for Longman (the publishers) but the program is still for sale. The copy is excellent, so if you are a frustrated 'Gandalf fan', why not buy a copy. I really would like to know what you think of it.

If you cannot find it in your local shops you can get it direct from Customer Services Dept., Longman Group Ltd., 464 Avenue, Hemel Hempstead, Herts, EN4 2AA. The price is £7.95 plus P&P post and packing. Mine may have been a repeat copy, but if you're interested, like mine just consider it as part of the adventure, and please do not complain - you have been warned!

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PROFESSIONAL PACKAGING

Iain Murray provides a program to smarten up your cassette library.

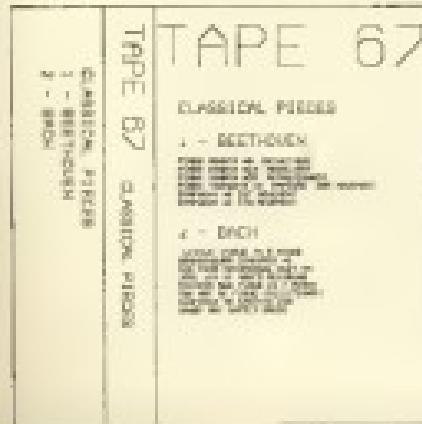
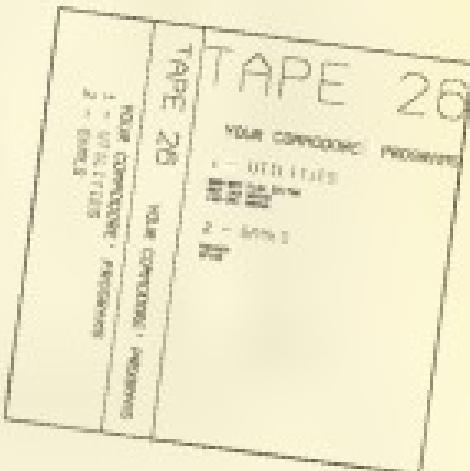
This program allows the user to produce new index cards for cassette tape boxes for music tapes or computer disk tapes using a Commodore 1280 Printer/Plotter. It uses most of the features of the 1280 including the four character sets, four colours and vertical text for the spine of the index.

The program requires input of the tape number, a title for the tape and for each side and the option to fit up to 10 items on the spine of each side of the tape. If any input is made incorrectly, then pressing

RETURN on its own, at the next input will cause a jump back to the previous prompt. The printer will then produce the required index card.

The printer driver routine for cutting out and folding the card (the top and side are then printed, followed by the side and end) is enclosed. The tape numbers and title are then pasted on the spine. The character size is set automatically, depending on the length of the titles required. Finally, the tape side and spine titles are printed on the back flap (though if the tape side and spine titles are the same, then only one will appear). On completion of the card, the option to print another is given.

Control characters in the code are detailed in providing ROM statements, but these ROM statements need not be typed in.



Home & Health

| | |
|-----------|--------------------------------------|
| 100-40 | set up and title |
| 70-20 | input tape number |
| 90-120 | input tape name |
| 130-150 | input code table and address entries |
| 160-180 | ready for output |
| 200-210 | set up position |
| 220-230 | new card position |
| 250-260 | print tape number |
| 260-280 | print tape title |
| 290-310 | print code table and note |
| 310-330 | print index |
| 350-370 | print tape number on splice |
| 380-390 | print tape title on splice |
| 400-410 | print tape notes on back flap |
| 420-430 | print code table on back flap |
| 450-460 | Close file |
| 1020-1110 | remove paper or end |



Stuart Cooke puts Amicasoft's Homepak to work.

If, like us, you use a Commodore 64 to do all of your work it is very important that you have quick access to everything that you wish to do. For example you may do a lot of wordprocessing and require access to a database or a spreadsheet especially. No problem, I hear you say, buy one of each program. That's a great idea, but one major thing is being forgotten, time.

The C64 and its disk drives are not exactly well known for their speed, in fact most people moan about the lack of it. A typical wordprocessor will take about five minutes to load, a database around the same. Now the problem becomes apparent. If you need to do a lot of swapping between programs then a lot of time is wasted loading them all in alternating the whole point of having a computer is to save in the first place. Why use a database when a card index has a lot quicker?

Obviously, if all of the programs that you require are available on one disk, a lot of time can be saved in exchanging disks. This is exactly what Amicasoft has done with one of its latest releases, Homepak. A wordprocessor, database, and communications program are all available on one disk.

It is also possible to go one step further. Wouldn't it be great if all of the programs that you needed to use regularly could all be in the computer's memory at the same time? From a couple of keys and the program needed would form into life ready to obey your every command. Team-Auto, a program that

looks extremely similar to the 3D software that is based on a Macintosh, offers just the facility. Both teams have up to three programs running in memory at any one time. The programs are a Wordprocessor, a Database and a Spreadsheet. As an added bonus a graphics package, for drawing graphs, pie charts etc, is also present on the software disk.

Homepak

As previously mentioned the aim of programs goes some way to solving some of the speed problems of the C64 as all of the programs are on one disk, however they are all quite slow in loading and a great deal of disk swapping is necessary if you need to use the other programs.

Each of the available programs are extremely well programmed and easy to use - the 11 page manual makes some of that - and have facilities that you would probably only expect to see on individual pieces of software costing as much as this complete package.

The manual, even though it is very good, can only be described as encyclopedic. It has been reduced so that it will fit onto the standard disk but the disk programs come on. Get a magnifying glass if you are going to be reading a lot of it once you'll probably need it.

Each of the programs are dealt with in turn. Screen shots are used to give you a general idea of what you should see on the screen when certain menus are accessed. And a handy end sheet at the end of each program's documentation gives a handy reminder of the keys needed to operate the software. I must admit that I did see the relevance of a very large section of the manual (over 100 pages) being given over to an explanation



of how to use the telecommunications software with CompuServe and the Commodore Information Service, these are American software services. Come on Amicasoft, you are going to be troubled of getting your name on the lips of the internet, why not offer the UK version so that it refers to a British system rather one of the many American lingo's available on there. Telecom Gold, I wouldn't have thought that too many people would be phoning America so that they can follow your instructions.

Homepak - you've pursued it - the wordprocessor, has some extremely interesting features. All of the useable commands are selected from pull down menus that are controlled by the function keys. This means that when you press the relevant key a menu (for example the printer format menu), will appear on the screen on top of your text, replacing the text underneath when you have finished using the menu. This is great as you never have to remember any of the commands such as those for headings or writing margins, as they can all be called up on screen. There is one slight gotcha however. A separator could have been put on the existing screen so that you

could see at a glance what function key brought up which menu it is frustrating to go through them all every time you want to do something. I suppose if one were really bothered you could always stick a lot of paper over your function keys.

When you have finished typing your letter novel you can have a look at what the page layout looks like with the new features. This shows a picture of every page with each letter being represented by a dot. This does come in very useful when things need to be positioned correctly as it may even help you to spot mistakes in the layout.

Of course all of the normal printer facilities such as underlining and spacing are retained but thought bubbles and footnotes are discontinued in a straightforward. Now, only if you have to tell someone where a heading starts you must also tell it where the heading finishes. This means that it is possible to have headings that run over more than one line of the page when printed. I must admit this did bother me a little continued as far as I didn't tell the program where my heading started the first time that I tried to use this function. The view option showed that something was amiss and I was able to correct the problem before I sent the document to the printer. I tell you that view was handy.

However—the database—is a little strange. In case you have never used a database I should explain how you would normally use one. You compare it to itself as an electronic card index file. You would set up a series of fields later which you should enter information. Then you can then ask the computer to find specific information from what it has stored or click on example of figures for information may be:

NAME
ADDRESS
TELEPHONE

You can see above we have the similarity to the old card index entries of Wolf, Housing is really different. You, it is still used for references storage and retrieval but there is no need to ask for what can be entered into the system. For example a few entries in the database may be:

Fred's Birthday's August 20th
Jane's Birthday's June 20th
Fred's Address's 103 Main Street

As you can see you simply talk to the computer, and any information can be stored. Once the information has been stored you can ask questions such as:

What's Fred's Address?

And the answer will appear as follows:

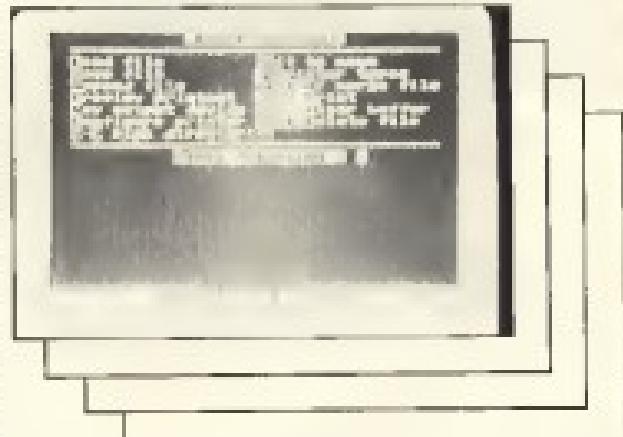
There is no provision within the program for going through a series of specific information through a tape drive to keep a printed copy of any information that you have with the computer. And al-

most information can be stored on disk for later inclusion in the wordprocessor.

Personally, I find this structure for a database very frustrating. I can see why for you could use the program to create a reading list or store information about a repeat collection. Even so the program is very clean and professional. Needless to say people will lose the fondness of the program and use it for just those things that I used. I couldn't see a way of doing.

One final feature that the program has is that of macros. It is possible to set up a file that holds information such as print names, and your password. These macros can then be used to speed the information required to the computer saving you a lot of typing if you access a particular system a lot.

Not much more can be said about these packages. They are all very good and would be worth a look at. The selling price is just for one of them. As I have



mentioned it is possible to do most of the most important things about this program. However undergoing changes all of the time and more and more people are becoming interested in programming via computers. Before I go any further it is worth stressing that this program is a general computer program which can be used to access bulletin boards and various network protocols. Gold it is not a Windows type system and cannot be used with systems such as Print or CompuServe.

With Hamster it is an EGA monitor it is possible to talk to your friends who have this hardware and monitors. new programs such as bulletin boards and access to other people's computer keyboards. Among all the bulletin boards none have CompuServe sections as there as you can ask questions to other people who also the system etc. In fact the day of the electronic office is here. One person can work in a file using Hamster. And it is possible to do this Hamster and they can do this prior to not using Hamster.

For the majority of casual users all three of the major packages are reasonable. ASCII, CPM, Commodore, character, Vectrex and the very popular Spectrum

and I found Hamster a little lacking but no doubt others will love it. All of the programs are well presented and easy to use. If you need any of the programs then get package a trial worth the price even though some of the packages may be missing that an entire package, individual program, computerized basic.

All in one

The other package mentioned is Team-Pak. What makes this program stand out from the rest is the fact that it is possible to have all of the programs in memory at any one time. Obviously, this means that you are limited to how much space is available at once for a specific task. Team-Pak gets around this in a very clever way. It allows you to choose, open, load, the software, exactly what you want in memory. Below is a list of what is presented when you load the software:

- (1) Desktop (1 page)
- (2) Plot Graph (1 page)
- (3) Write File (2 pages)
- (4) Home Office (2 pages)
- (5) Utilities

Dealing with such aspects in your Desktop computer or a microprocessor-based system and the manager probably all of which are standard accessories of the same price and very easy to switch between.

Plus Graph is a stand alone business graphics program that is used to display information from either the spreadsheet or generated by hand.

With the exception of the wordprocessor and the message both run with a help facility.

Home Office is Wordprocessor plus help and a spreadsheet plus help.

Utilities are such things as 'Format Disk' and 'Format File'.

As can be seen from the above breakdown over a number of different areas are covered for. My personal favorite is Writefile. This allows me to have a database at my fingertips with information such as company addresses and telephone numbers, and access to a fairly decent wordprocessor at the same time. Up until now the only that has been possible was to have two disks on my desk.

So far the review. Granted that the software does have its limitations but in my opinion there are more than adequately overcome due to the software's convenience.

With the PlusGraph only 16 lines of text can be entered into the wordprocessor. This doesn't sound too many but when you realize that a line will character a quick calculation will show that around 1000 words can be entered before you run out of space. This is more than enough for the standard letter that you need to write. All of the usual commands are present in the wordprocessor such as line spacing and margins. There are however some possible anomalies, such as the lack of headers and footers. An interesting note concerning this problem is given in the manual, last page of the book.

Obviously the wordprocessor is not as sophisticated as many of its competitors. There are no fancy menus or icons in the program. Don't forget that you do have the 'Help' function or the expanded version which soon solves the problem.

It is remarkably easy to transfer data from both the spreadsheet and database into the wordprocessor. In fact the only

concern here is the printer and tell the program to print the information in the database at the top of every page of paper, clever huh?

As with Writefile, a picture function is also available within the wordprocessor plus function is not present in Desktop. This prints just the text to the screen as it will appear on the printer. The 'Windows' of the screen act as a window over the larger 80 columns of the text.

The database or file manager is more or less what I would call a real database. When you run the program you are presented with a grid of information for all entries, such as the date given earlier in this article. Information is then entered as requested by the program and stored on a disk for recall at a later date. Again no fancy icons or programs in this program and it is fully adhered to use in places. But it does its job and is very handy.

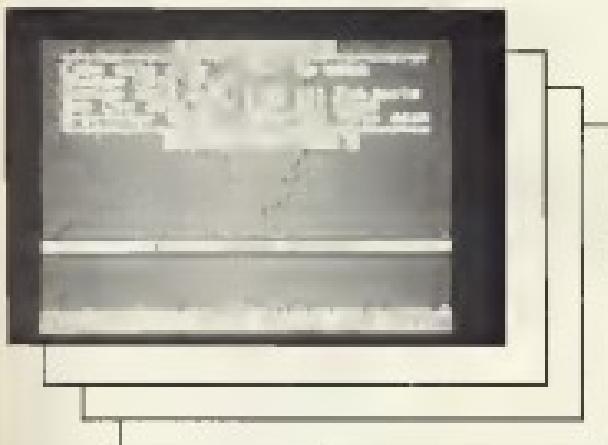
Commands available allow the user to move to specified records, search for a specific piece of information, review records, update records and even copy records. It is possible to say introducing a specified field, it is even possible to do a sort on disk with up to three fields.

The expanded file manager, available from writefile but without the wordprocessor present, offers even more facilities for the more advanced user. Examples of added commands are 'makewield' and 'checkkey' which make a specified field the initial field of a record, spreading up all branching and sorting and print the contents of the key field respectively.

The spreadsheet is not exceptionally large 50 rows by 17 columns. This means that it is not suitable for use in a large business but is great for working out budgets or building regimens. Don't forget you can even get the wordprocessor to print out a letter taking information from the spreadsheet making getting bills very easy. In fact very often it is the ability to have half of the screen displaying the contents of the wordprocessor and the other half the spreadsheet. This makes it very easy for you to see exactly what you are doing.

The manual for the rest of programs written in such a way that even a beginner could get started without too much difficulty. All aspects of the programs are dealt with via lots of examples. For instance the section on the spread sheet shows how you could set up a budget sheet showing all the money that you have spent so far.

More money can only be described as the programs that a lot of Commodore users have been waiting for. CB4 on its best features but there are ways to get around this. The fact that the programs you are using to remember to be loaded into memory and the ones that don't can be stored on one disk in separate load on the programs in the memory and that's it. Everything is a year longer ago. Now I've started using the programs I wouldn't be without them.



As I have previously mentioned the software is very similar to that found in the Commodore Plus4 computer. The layout of the programs and the functions for use are very similar, in the sense. For this reason the software will probably give the user just that the Plus4 did when it arrived on the market. Only Writefile the wordprocessor and others such functions abounded when that besides

tip in part information from the database is via the wordprocessor. It is even possible to select certain fields for printing, this makes the program very good for addressing letters or printing labels. It is the facility that allows you to add headers to articles. Simply type them at the top of every page for the header when you print your text. Then set up your footer as a database file then put



He had no idea what he was doing through the doorway back to the room where he was now confined. It was a place of complete repose, and he was lying on a sofa, his head resting on a cushion, his eyes closed. He had been sleeping for hours, and he was deeply fatigued. He was still in a daze, and he did not know where he was or what had happened to him. He was alone in the room, and he could hear the sound of his own breathing. He was very tired, and he wanted to sleep again.

and the first edition of the *Journal of the American Revolution* is available online at www.jar.org.

and, as far as I can see, the best way to do it is to have a single, well-organized, central library that is accessible to all.

1996-1997
Yearbook

station well. The station
depot, post communication
center with post office was
displayed top left and the
appropriate class members top
right. The bottom half of the
sheet gives the names of
legends which are enclosed back
of the printed indication for
the beginning of a station

an original, unique, although
not in every detail, production
of the author's own brain,
represented by the words and
sentences which he has
written down, and which
are the expression of his
own thoughts and feelings.

and the other two from the same

which I have seen, what is known about the life history of the Department's tree snail species.

Once an entity has been identified, the next question is which it will retain, transfer, merge, or end. When analyzing various options, one can never have sufficient cut-offs to fit every particular.

The navigation message will contain the time of orbit/burst discontinuity and allow it to be correlated with the previous message. If a user receives a message which is not correlated with the previous one, he can ignore it.

Admiral, 1st class, 1870-1872

and the other, the "old man," was a
smaller, more slender, younger-looking
man, with a very pale face, and
thin hair, which was grey at the
temples. He had a very kind
and gentle expression.

- 10 -

1000

卷之三



3. Many other questions must be
asked, with these.
Inability to live up to obligations
and to meet all social and
moral requirements is a sign of
the presence of a disease. But
such a disease may be
of many kinds. What is
the disease? What is the
cause?

卷之三

and the other two were
the same as the first.

(原標題) Asia's first female oil tycoon
has come a long way



19. *Leucosia* *leucostoma* *leucostoma*
Linné 1758.

1987. *Journal of the American
Statistical Association* 82: 1-11.

COMMUNES

中華書局影印

LAWRENCE BERKELEY NATIONAL LABORATORY



For more information about the National Research Foundation, visit www.nrf.ac.za.

卷之三

The white letter "p" which
appears on the front page of the Times
is a symbol of the
newspaper's
commitment to
the principles of
accuracy and
integrity.

spared, and the author's name
is not mentioned.

and the other day, when I had
a chance to do so, I did. I
had the pleasure of meeting him
again, and he was as pleasant
and kind as ever. He is a man
who has been through many
years of experience, and he
has a wealth of knowledge to
share with others. I am grateful
to him for his time and effort
in sharing his insights with us.

Consequently, the
whole system of
theology is
entirely
overthrown.

卷之三

been the pack that includes a caused relating to the Major problem, a caused rough down of the main extension of the game, a main reason of the following changes and a problem of the this chapter is also discussed in the game. The last card in the pack is also because it gives the cause and reason of the memory problem concerning the first part of the first question that contains the first answer. The second answer is also given in this part of the game. The third answer is also given in this part of the game. The fourth answer is also given in this part of the game.

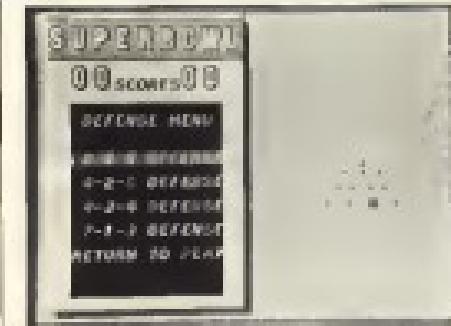
The second is a comprehensive
one, based on a film. The
third is the most difficult, as
it requires the ability to write
about a complex subject in
such a way that it can be
understood by people who
have little or no background
in the field. This is the
kind of writing that I have
done for the last few years.

10.000.000

128 of 128

the first time in the history of the world, the
whole of the human race has been gathered
together in one place.

SUPERBOWL

Drew
Carr

THIRTY-NINE TWENTY-FOUR
Thirty-on, Hail! Hail! Yea, after commentator Charles' Superbowl has finally arrived with its considerable narrative skill and variety of programs, let's look at the defense menu due to various gameplay problems (some of the defenses due to various gameplay problems because of over 100 points were never exceeded) but elsewhere have been sorted out.

Fans of American Football will know that despite initial apprehension, there's actually a great deal of skill involved in the game, strategizing, tactics and reading to predictแนว patterns. Charles has managed to pack a lot of detail into the game, although some passes and patterns are displayed with a reference to real football on the commentator. Few people who know nothing at all about the strategy game there is an audio tape included in the package which gives you a quick run down on the rules, terms and basic tactics. This works very well and is a lot better than the second 10 page booklet that you usually get.

The screen is divided into two main sections. On the right is an optimized view of the playing area. This depicts the starting positions of the men that you want to go and defend and then follows the move throughout the ball has been tagged. You control one previously designated player although it's possible to change this during the course of the play if you are too enough clever men on each side, running or 23 different defenses takes quite a bit of getting used to.

The left hand side of the screen shows two functions. As a purely decorative part of the game, an action tape of the previous play appears on the play screen. This shows the players running, throwing, blocking and catching the ball and is mostly automated although it's nice to get a bit repetitive after awhile (you can stop the display with a quick press of the hot button).

The only really part of the game - deciding your tactics is determined through a series of menus. Starting with the offense, an initial menu gives you the chance to try a long or short pass, a running play or a special play (should you attempt punts and goal line rushing). These choices lead into sub-menus where you're given a choice of starting formations with such options, names as shotgun and option. Selecting 'new best friend' from the menu allows you to switch the players strategy to their designated pattern - a very useful option that gives you some understanding of the theory behind the mechanics. You can also change which player you want to receive the ball over the course has passed.

When you are happy with your chosen the play parameters allow you to appear for the computer to decide on their defensive strategy. As soon as that a ready the menu is ready to be accessed. The computer keeps the ball back to the quarterback, while the other players start to move upfield according to your instructions. A quick press of

the fire button makes the come around for eligible receiver starting with the one that you previously assigned. As your finger is removed from the button, so the ball is thrown and the receiver comes under player control. He must then move to where he thinks the ball is going to land in his stickiness to catch it.

Instead of passing the ball the defense tries to knock a player attempting to score a field goal or simply prevent it before it's been kicked. Keeping the ball position to try to stop a power kick, changing the percentage of the maximum kick accuracy changed. It is bringing up to go for full range every time but this is wrong as they increase with a knock decreases with power.

The defense is somewhat more complicated to explain. Apart from choosing your initial formation type 3-4-4, 4-3-4, 4-3-3 and 2-3-2, you must also decide who is going to mark which field pattern are going to be in the opposite

10 10 10 10 10

building the ball and all alternate players will receive automated. Again, you can choose which player you will be control in the changeable transfer. The "Pudge" Potts is likely to be a popular choice!

Superbowl is the best American football game released. Based on the January's game in which the Chicago Bears thrashed the New England Patriots 41-10, it is an extremely sensible simulation. Concepts of the game need look no further. For people who know absolutely nothing about the game, why not try your hand before the new series starts on Channel 4.

G.H.H.



ACTION REPLAY

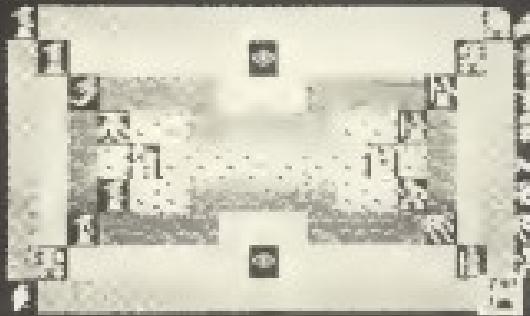
ANCHOR II: ADEPT

Atarisoft

£19.99 (joystick required, C64)



ANCHOR II: ADEPT



ANCHOR WAS ONE OF THE first original strategy games ever created, faithfully imitating several boardwars. Now Electronic Arts has released a sequel on the Amiga that's called *Anchors II: Adept*, over sixty taking sides in an open struggle between the Order of Order and the Masters of Chaos in a game featuring both energy and blade elements.

The strategy takes place on a square board where the four concentric rings representing the classical elements of Earth, Water, Air and Fire. In addition there are two central squares which represent the void and the home squares for each side - the Fortress of Order and the Temple of Chaos.

The aim of the game is to destroy all power points. Two will form the void squares and the other four are the outer corners of the classical bands. These four points must be harvested by your band. They can also be harvested by the opposing forces.

You start the game with three spells - one on each element. Each turn they can either move or cast a spell providing that you have sufficient energy to carry out your choice. There are seven spells available from the void that you will use more than any other in sequence. This is used to bring another point on the board.

The other spells available to you are held one at your

posse, workers are apprentices, a posse, mages are energy release, one of your own experienced priests, besides a hostile enemy or something called speculator which is a tool builder used to put your adversary out of his misery. Casting spells costs varying amounts of energy depending on its potency. How much energy you have at your disposal determines how many power points you occupy.

There are two types of posse that can be harvested: dreamers and mages. Both sides have the same changes in their abilities: apprentices are the workers and clerics who, while elements are different, Order can call on the services of a priest; whereas dreamers and mages representing earth, water, fire and air respectively.

All other characters have different strengths and weaknesses when it comes to combat. There for example you have to use your archer against the blademaster but if he kills him, he gets stronger while you get weaker. They are also vulnerable most of the time and so make extremely inaccurate approaches. Then again it is a pugilistic though which is less avoided as your energy is so when it has been used it leaves a gap in the map.

Combat occurs when two

posse want to occupy the same square. The same happens in the background where you must make instant decisions as you try to probe the opposition's weaknesses and other poor ones strengths to their best advantage. Each posse's strength is displayed as an arrow's bar showing the state of the others. This reduces the successful round initiated. When the last battles are the side still leaving the other unable to control the disputed square.

As might be expected power levels will rise in their four elements e.g. lightning or other water based. After you have fired your blaster bolts or whatever it takes time before you are allowed to fire again. The game starts with three points to begin and the computer lets you know with a ping - High - Low - depending

on which side you are. The board is itself has a number of barriers which must be dodged to progress successfully. The different elements have differing effects on walls and rooms. For example fire weapons are safe but freezing weapons attacked whilst walls damage walls and doors.

Control of the game is extremely simple. Spells are selected from a menu while movement is achieved by moving a square shaped cursor. Moving, sound, character attack is straight forward. Moving a mouse cursor, pointing the fire button and moving the joystick in the desired direction. Adept can take place outside what is light - a cockpit like

Anchors II features a wide range of options to choose from. Which side you play, number of players and the skill level of the AI. Although the computer plays a very mean game and you are likely to be beaten in less than five games, I would seriously recommend that you wait for the demonstration game, a few games in that you can get some idea of the strategies and tactics required.

Anchors II is an excellent strategy game and one that will take quite a bit of time to master. If you can play with the other side and have a totally new set of tactics. While a decent game, such the stated standards set by the original that is not real challenge and the game can be comparatively recommended.

C. B.M.



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CARTRIDGE
INCLUDING
FREEZER**

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Table D-10 *Differences between the 1990 Census and the 1990 Current Population Survey: population with specified family size*

ADVANCED CERTAINING SYSTEMS
PAGE - contact the supplier for all the hard
information concerning design and operation
of your particular project. There are the
Caterpillar Advanced Systems and certain other
systems available.

SCREEN BUMPER FACILITIES.—A low rate of \$10.00 per night for residential customers. Please call page with 10 minutes of time for residential customers over three years old and registered at the Biddle Bumper park. Residential lot, Residential occupancy, for the duration of the stay of the customer. Item is subject to revision by the Biddle Bumper park and Biddle Co. Inc.

THE PETRA RAM FOR BASIC-PROGRAMME AVAILABLE Your new computer Memory 1000 Memory tape. There were 123 basic soft-wares developed and distributed in the last four of the year 1984. Can be used in PETRA II and PETRA III.

基础教育研究·初中生版

Robert J. McWilliams - with Steve Berman
and Tom and Gwendolyn Fitch. Help them
out.

- many who grew up the old way

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REBATE SWITCH - helps to reduce energy costs and avoid IDLE mode problems during battery-powered operation.

ANSWER: DPP BURTON - THE PAPER MONEY
COUNCIL

FREEZER:

Teachers need support from educational systems programs and different types of studies to assist them in their professional development.

Review Groups can take one task at a time
Pilot the program
Present it in 15 hours for the
student to review

Print > **General** tab
Select **Color** mode
Full page printing
Front and background colors changed
Automatic printing
Change the magnification factor

Recovering Health
With Your Own Medicine Cabinet

14 Days recovery
start quantifying
of your own
experiments.

is available by the author
from Springer or directly from
Computers
in Education
Institute, CSEI, 2102 Regent St.,
Vancouver, BC V6B 5G9.

НР
СЕМЬЯ

Save your fingers a lot of
work with our new software
service.

IT'S THREE O'CLOCK IN THE MORNING, but you're at the computer keyboard having just finished a research paper, or writing one of the papers programs from *Four Commodore*. Your fingers will be the keyboard and pens, the letters R, U, and M. You've lost sleep, and nothing happens.

Well, I can say that we have all had problems before now. When it does happen, it's a matter of spending hours searching through the program, or trying remedies. No matter how long you look, or how many people help you, you can usually guarantee that at least one tiny bug slips through unnoticed.

Here at *Four Commodore*, we pride ourselves on the quality of living that we give. Unfortunately, this usually means that they are also very long, thus taking longer to repair, and costing more money. So when 90% of the bugs in *Four Commodores* are fixed, straight from a provider of working programs, it is therefore very unusual for errors to appear in the original.

Because of the length of our programs we do get a large number of requests from readers who would like us to put specific

SOFTWARE FOR SALE



programs on tape or disk for them. Obviously this is a very consuming and time-consuming task required at such a low cost.

We are therefore pleased to announce the start of the *Four Commodore Software Service*. Some of the programs from each issue of the magazine will now be available on single cassette for a price of just £10. We will not be making of the available tapes; they would have to be a lot more expensive and more difficult to produce. They should cost you less

problems. Through use of the programs will be guaranteed and it will be a simple matter to use the programs to their full potential.

All programs on the cassettes will be saved using a basic tape routine. However, we cannot guarantee that all programs will work correctly with the basic routine present. We therefore recommend that before you use any of the programs you make a copy of the program, or your own cassette tape and use the version of the program and the original.

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POSTCODE _____ TEL. NO. _____

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WOLSEY HOUSE, WOLSEY ROAD, BRIMMEL HEMPTSTEAD, HERTFORDSHIRE HP2 5SS**

Please allow at least 28 days for delivery.



SPRITE IDEAS

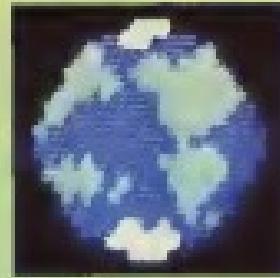
When you are designing a game one of the longest jobs is designing the squares. If you are good at art then fine, if not your next monitor will probably end up looking like a square box with lots.

Now, Your Commodore comes to the rescue once again with Sprites! If you have designed any sprites for games and you don't mind other people seeing your masterpiece when you send them in to us, each month we will be offering \$100 for the best entries.

Your species can be anything at all (within reason), if you've designed a series of animated characters that send in the lot the il love to have a look at them.

So, next time you see after an Ozyme put in your newspaper, have a look in this section of the magazine and you may find just what you are looking for.

The month's entries are from Aswan Khan from Bawali, Middan.



Listings will be much easier to enter with our new system.

COMMODORE LISTINGS ARE RATHER well known for the horrible little block blocks that always showed. Unfortunately the graphical characters which are used in magazine graphics and control characters also look ridiculous very well and they are also difficult to find on the Commodore keyboard.

In future all control and graphics commands will be replaced by a mnemonic within square brackets. This mnemonic is not typed out as printed in the magazine but rather the corresponding key is given so the keyboard can be used. For example [RIGHT] makes move the cursor right, just do not type in [RIGHT]. All of the keywords, what keys to press and how they are shown on the screen are shown below.

Any character that is accessed by pressing Shift and a letter will be printed as [Shift A]

[Shift A] shift and A

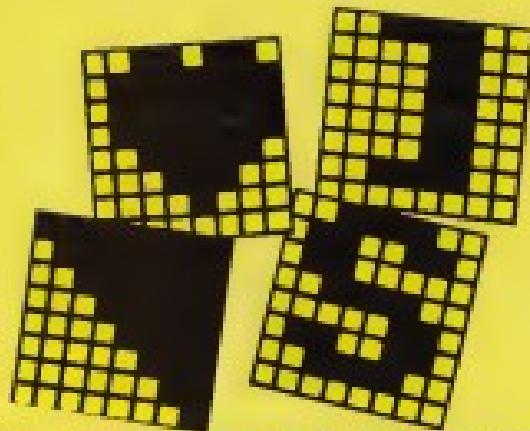
[Shift C] shift and C

Any character that is accessed by pressing the Commodore key and a letter will be printed as [Commodore A]

[Commodore A] Commodore and A

[Commodore and +]

[Commodore and -]



LISTINGS

If we characters are repeated the mnemonic will be followed by a number. This number is how many times you should enter the character. Any number of spaces over one will also be represented in this form.

[RIGHT] print cursor right 10 times

[CTRL] print Commodore and + 10 times

[SHIFT] print the space bar 10 times

Any other character should be easily recognisable (for example [CTRL-A] means print CTRL and A and [CTRL-A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z] means print the left arrow).

Any number of invocations can be enclosed in brackets. For example

[SEARCH(347)]

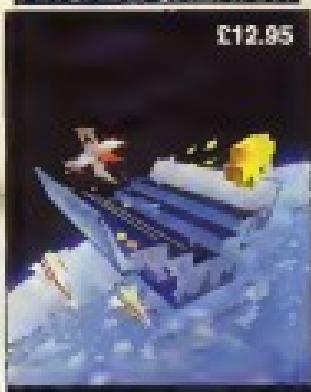
means type 10 shift A's 10 spaces and another 10 shift A's

| KeyName | Symbol | what to press | KeyName | Symbol | what to press | KeyName | Symbol | what to press |
|---------|--------|------------------|--------------|--------|---------------|----------|--------|---------------|
| [RIGHT] | J | left/right | [SH] | J | | [BLACK] | J | CTRL & 1 |
| [LEFT] | I | shift left/right | [SH] | I | | [WHITE] | I | CTRL & 2 |
| [UP] | L | Shift & up /down | [SH] | L | | [RED] | L | CTRL & 3 |
| [DOWN] | Q | up/down | [SH] | Q | | [CYAN] | Q | CTRL & 4 |
| [P] | W | P | [HOME] | W | | [PURPLE] | W | CTRL & 5 |
| [T] | E | shift & H | [HOME] | E | | [BROWN] | E | CTRL & 6 |
| [R] | S | H | [CLEFT/HOME] | S | | [GREEN] | S | CTRL & 7 |
| [U] | R | left/division | | R | | [BLUE] | R | CTRL & 8 |
| [O] | T | shift & W | [TNSOFF] | T | | [TEAL] | T | CTRL & 9 |



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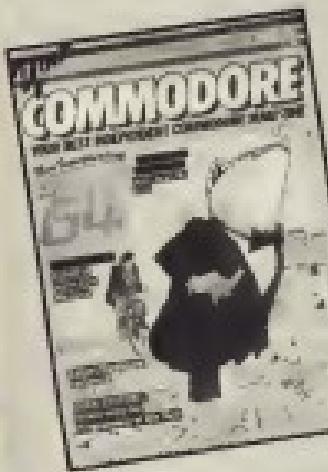
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You're

COMING SOON

COMING SOON

COMMODORE READER'S



S
U
R
V
E
Y

1. Do you read Your
Commodore regularly?



1. Would you please rate the following statement which best describes how much of Your Commodore you normally read or look through:
 Read or look through most or nearly all of the advertisements.
 Read or look through some of the advertisements.
 Just read or look through the occasional advertisement.

2. With regard to the advertisements in Your Commodore do you:
 Read or look through most or nearly all of the advertisements?
 Read or look through some of the advertisements?
 Just read or look through the occasional advertisement?
 Very rarely/never look at the advertisements?

3. Thinking specifically about the advertising content of Your Commodore, would you please rate the frequency of advertising material - Display and Classified - in terms of circulation (please tick one against each type):

Display Classified

Very useful
 Useful
 Not very useful
 Not at all useful

4. Have you ever ordered or bought equipment/product after reading an advertisement in Your Commodore?

Regularly
 Occasionally
 Never
 If the answer to Question 4 is yes, what was the last item you purchased in this way and what was its value?

5. Does anyone else read your copy of Your Commodore?
 No
 1 or 2
 3 or 4
 More than 4

6. Do you keep your copies of Your Commodore for:
 One month
 Three months
 Six months
 A year or more?
 If 'yes' PLEASE ANSWER THE NEXT QUESTION:

7. How often do you refer to back issues of Your Commodore?

Never a week or more often
 About once a month
 Once every three months
 Less often
 Never refer to back issues

8. What magazine other than Your Commodore's competitor do you read?

9. Name the three television programmes you watch regularly

10. Which component(s) do you own?
 C78
 Plus4
 C64
 C128
 Vic 20
 PET
 Spectrum
 Amstrad
 BBC
 Electron
 Atari

11. Do you own any of the following disk drives?

1541
 1571
 1581
 1591
 1571

12. Do you own any of the following printers?

Commodore printer
 Home compatible printer
 Others

13. Do you own any of the following peripherals?

Monitor
 Joystick
 Joypads
 Mouse
 Graphics card

14. What Sunday newspaper do you regularly read?

Sunday Times
 Sunday Telegraph
 The Observer
 Sunday Express
 Mail on Sunday
 News of the World
 Sunday People

15. How long have you had a Commodore Computer?

Less than three months

Three to six months

Seven months to one year

One year to two years

Over two years

16. Do you use your computer for the following:

| Original programmes | All the time | More than half the time | Sometimes | Never |
|----------------------------|--------------|-------------------------|-----------|-------|
| Typing in games listings | | | | |
| Typing in utility listings | | | | |
| Playing games | | | | |
| Educational uses | | | | |
| Business uses | | | | |

18. Who else uses your computer?
Husband
Spouse
Parent
Children
Friends
Others

19. How much do you estimate you have spent in total on the last 12 months on your computing equipment?
\$0-\$50
\$51-\$100
\$101-\$200
\$201-\$500
\$500-\$1000
\$1000-\$2000
\$2000-\$5000
Over \$5000

20. How much do you expect to spend on hardware over the next year?
\$0-\$50
\$51-\$100
\$101-\$200
\$201-\$500
Over \$500

21. How much do you normally spend in a 12-month period on the following types of software?

22. Do software reviews influence your buying?
Yes
No

23. Were you previously a regular reader of BOTH Your Commodore and Your PC? Yes
No

24. Since we incorporated Your PC, do you think that Your Commodore is
Better
Same
Worse

PLEASE STATE WHY:

25. What do you think about the balance of articles in Your Commodore?

| | About | More | Right | Less |
|----------------------|--------------------------|--------------------------|--------------------------|------|
| None | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Programming articles | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Software reviews | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
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| Book reviews | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Computer in type-in | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
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| Adventure columns | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Letters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Competitions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

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No

27. Are you a user of Your Commodore's selected publications?
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28. If you answered yes to Question 23, do you attempt to purchase the magazine that day?
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29. Do you normally obtain your copy by:
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Newspaper shop collection
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30. If you do not obtain your copy by subscription, is it due to one of the following?

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31. If you do not subscribe, then which type of newsagent do you most often purchase your copy?
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Travel agent
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32. Are you a member of a computer club?
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If yes, please give details:

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|-------------|-------|-------------------|----------------------|-----------|
| \$0-\$50 | | | | |
| \$51-\$100 | | | | |
| \$101-\$200 | | | | |
| \$201-\$500 | | | | |
| Over \$500 | | | | |

33. Do Software Charts influence your buying?
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34. Which issues do you type in?
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35. How did the box which best describes you:
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36. Which other computer magazines do you regularly buy?
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GAME of the month

Gordon Horrell explores the complexities of US Gold's Ultima IV.

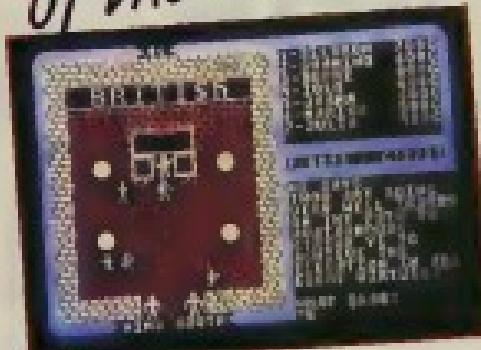
SINCE THE MIGHTY KEEF EXODUS WAS destroyed, Lord British is looking for someone to improve the quality of life throughout the land of Britannia. Ultima IV, featuring an intriguing something called Avatars about which, everything has heard and nobody appears to know anything.

How you come to be summoned for the quest is an interesting story. While walking in the countryside, you see a bright light and hear a strange noise. From then on things get warmer and warmer and you are inexplicably forced by some magic into a mysterious place—an old mansion where you come upon three lined up barrels, riddle posters and other weirdo. Depending on your answers, your character is assured and your prediction determined. This may be one of eight types including lighter, might, short and longer.

The land of Britannia is a large and varied place. There are eight major islands each one specializing in one of the eight professions. The people people are friendly and you need to talk to them and you need trying to piece small strings of information. These are divided and dispersed throughout the places and there. Outside of the towns, the land is more hostile—scattered bands of rovers, vixens and semi-hostile entities who mean the countryside where you trying to tell you. The land will also be hostile—attack you off poor house givers that can quickly distract your strength although those are hidden in several of the houses who will hurt you—for a price.

There are dungeons to be discovered and explored, and places to be sought out. Travel is usually on foot although you may be able to buy, rent or borrow horses to speed up your journey. You will constantly need a map to visit the islands, not all of which are on your map and you will have to learn how to use the microscope to view them. There is also a need to be a hunter or something similar, hidden away.

As you travel the land and talk to the people, you can try and persuade them to



over your party. Up to seven others can join - one from each of the other profession types - paladin, bard, ranger and the cleric being the others. Some will only join you if you prove you're worthy to a certain degree. Experience points are awarded for killing an enemy. But, Lord Death and the well known powerbase you have gained will be no gain.

Death plays a crucial part in the game. There are 20 spells to be mastered but before you cast them others casting one have to know the appropriate word and then all their casting properties. There are six main ingredients that can be bought at a tiny shop further along all the potential spells require materials or ingredients which are not easily come by. The spells range in power from simple ones such as healing someone during a magical fight through levitate and advanced protections to kill and piss - a really little tool that causes your opponents to attack themselves instead of you. Unusually enough fighters and death both have some magical ability although how much depends on your job and experience level.

There is a lot of fighting to be done. You are given ten points per combat which affect on a variety of factors (hp and vmp, the move, attack or cast spells) for each of your characters to earn. These are battle points depend on what weapons

and armor you purchase and how you display your force. The use of traps and bows, especially by the members of the book of four parts is recommended. The monsters - over 20 different types - fight intelligently and will not leave if forced to run leaving behind a treasure chest although this is frequently trapped in you try to open it.

So what of the quest itself? The first part involves obtaining a general Amaranth in the right place - human culture, human sacrifice, honesty, compassion, justice and spirituality. This quest should keep you interested in various groups and should be visited frequently. At the appropriate time you have to go and visit another at a shrine - provided that you have found the correct time to go via calendar and have learned the appropriate incantations to chant. Once there you get granted a vision. Again check that you've well used to had been educated enough. I found the real tour on the right level at Dangerous Dungeon. After that, I don't know away from the fact that there will be some final questions in a place known only as the Abyss.

Other things to look out for are secret passages which should be avoided and discovered and the guild who you will need to purchase magical items and generally useful for trapping, thievery. A moment will also be spent on purchasing

a sword and sometime to sell you off. Above all you gain experience and win everything down. The amount of work and expense that you have to put into getting over the smallest item is phenomenal.

The player is in three main books. A large map displays your current position (one of eight roads only). The top right hand border displays the numbers you and your party have in the bottom box is used for command entry and as a general information box displaying the date, day, time, controlled by simple key-commands apart from conversations which usually only require a single word. The game comes basically packaged with two rule books, a map and a reference card.

Ultima IV is a superb game and is well ahead of any of its rivals. To date I have played it for well over 10 hours and still feel that I have only scratched the surface of it. It possibly has one game that you might want to try Ultima IV.

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| 6 Jason's Revenge 4 | 16 Mr. Robot 5 | 25 Shadow VI |
| 7 Jason's Revenge 5 | 17 Mr. Robot 6 | 26 Shadow VII |
| 8 Jason's Revenge 6 | 18 Mr. Robot 7 | 27 Shadow VIII |
| 9 Jason's Revenge 7 | 19 Mr. Robot 8 | 28 Shadow IX |
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| 15 Jason's Revenge 13 | 25 Mr. Robot 14 | 34 Shadow XV |
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| 18 Jason's Revenge 16 | 28 Mr. Robot 17 | 37 Shadow XVIII |
| 19 Jason's Revenge 17 | 29 Mr. Robot 18 | 38 Shadow XVIX |
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| 22 Jason's Revenge 20 | 32 Mr. Robot 21 | 41 Shadow XXII |
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TOP DRAW

Alan Webb explores the complexities of medium-res graphics

Everyone probably knows about high-resolution graphics and how they can be used for brilliant effects and works of art. I am equally guilty having in the past discussed them (see January issue). For some applications, however, it may be possible to settle for a lower resolution system.

The CGA, in common with most other graphic cards, has a relatively set of standard characters. Amongst these are a number which represent squares one quarter the size of a normal character. These squares can be used to plot lines or dots. Using this system you can obtain 16 combinations of point sizes and 30 points up. What you may not consider this not much of an idea. I recently saw computer pictures drawn in this technique. The aesthetic quality can certainly stand between interesting, and just plain terrible. However, this is not the sort of medium.

The routines given here give complete control over the drawing of lines and dots and the manipulation of screen areas.

The commands have the following syntax:

SYNOPSIS

**MOV1,MOV2,MV3,MOV4,
COLOUR,MV5,MV6,MV7,MV8**

MV1,MV2,MV3,MV4 are the co-ordinates of the dot.

MOV5 decides how the dot is drawn.

MV6 is sum the dot.

1 — draws the dot
2 — fills the dot if it is in a clear, clean area of the screen.
COLOUR specifies the colour of the dot. Values of zero to 15 change the colour. A value of 16 leaves the colour unchanged.

MV7

**SETCOL1,SETCOL2,MOVE1,
COLOUR**

MV1,MV2,MV3 are the co-

ordinates at the ends of the line.

MV4 Area manipulation.

**MV5,MOV1,MOV2,CHARAC-
TER**

CGA specify the position of the top left hand corner of the area.

MV6 is the width of the area.

MV7 is the height of the area.

COLOUR sets the same way as the previous commands.

MV8 has the effects:

0 — CGA's reverse character.

1 — reverse field. Reversing the movement restores the area.

2 — fills the area with the character specified.

CHARACTER is only relevant if MV8 equals one. A logical area is generated in memory when MOV4=1 and is added when MOV8=1. The character value in the PGROM value is added to 20 times the area and a value of one fills the area with the letter A.

This command acts on a 40 by 30 resolution and values below and out of range values are ignored.

I've included a simple demonstration which shows some uses of some these commands. The first uses shades of grey and dotted lines to give a 3D effect. The second is just pretty and uses the area command to form the pattern.

MV9,MV10,MV11,MV12

MV13,MV14,MV15,MV16

MV17,MV18,MV19,MV20

MV21,MV22,MV23,MV24

MV25,MV26,MV27,MV28

MV29,MV30,MV31,MV32

MV33,MV34,MV35,MV36

MV37,MV38,MV39,MV40

MV41,MV42,MV43,MV44

MV45,MV46,MV47,MV48

MV49,MV50,MV51,MV52

MV53,MV54,MV55,MV56

MV57,MV58,MV59,MV60

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MV105,MV106,MV107,MV108

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| 187,189,187,188 | 181,3,184,1,188 | 142,3,186,182,172 | 1,201,1,202,189,204 |
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Allen Welsh takes you
one step further in
your quest to master
machine code.

LAST MONTH WE STARTED TO look at the various ways of moving data about. While we concentrated on the screen, the principles apply equally to moving data in memory. I hope you bought the homework assignment. With the material we covered last time, you should be able to come up with several clever solutions to each problem.

First, I worked a routine to print a row of asterisks along the top of the screen. Here is one solution:

```
10 AVERIFY1 TBL 1
100 RDM 744200
110 RDM 10A 174
120 RDM 15B 87032
130 RDM 100 00
140 RDM 10A 043
150 RDM 15C0F 100 11000
160 RDM 10Y
170 RDM CPT 100
180 RDM 10B 1030F
190 RDM 4T5
200 RDM 1
```

This uses the print character command, 80H, to print asterisks to the screen at the current cursor position lines 110 and 120 print HORZ (15C0F100). I used this method since there is no need to worry about updating the cursor status. Bear in mind with old ROMs (as well as double bit modes) that when you set the cursor colour, the colour status is not updated. That means that if you move data stored in the screen memory you will not necessarily get the colour you want. New ROMs may have had this fixed.

The second problem asked you to print the character set on the screen. Here is my solution:

```
10 AVERIFY2 TBL 1
100 RDM 744200
```

```
110 RDM 1D7 13
120 RDM 100F FFA
130 RDM STA 00400 7
140 RDM 10A 01
150 RDM STA 8000 7
160 RDM 100 00
170 RDM 15C0F 100 11000
180 RDM 4T5
190 RDM 1
```

In this routine, I have used complete instructions to put characters at the start of the screen memory. Since I don't want to change the address used, indirect addressing is necessary. There are 256 characters, with PC0H values ranging from zero to 255 in the last six bits. Utility using the Y register to update the character to be POKE'd. Lines 140 and 150 take care of the colour memory for old ROMs or colours. The basic requirement to the routine is:

```
10 FCN 1-Q 16 256
20 RDM 10044, 1
30 POKE 8000, 1
40 HLT 1
```

User 100 sets up a slightly different way to the loading we've used previously, but I'll cover that shortly.

There is one more interesting mode which you should be aware of. This is an extremely fast mode called the Indirect Addressing. The mode uses the X register to look for an address in a table and set up that address. The instruction for this mode has the form:

```
(address,X)
```

where address is a zero page location. Here are some examples:

```
LDA (STA,X)
STA (STA,X)
```

In operation takes a little extra clocking, but here is what it does: imagine that you have a table of 256 addresses stored as a table in zero page starting at 100:

```
$00 low byte address 1
$01 high byte address 1
$02 low byte address 2
$03 high byte address 2
$04 low byte address 3
$05 high byte address 3
and so on.
```

If it contains the value zero, the instruction LDA (STA,X) does the following:

It adds the contents of X to the value of the address STA, together with:

The accumulator is loaded by the contents of the address held in the resulting byte pair STA and X.

Similarly, if X contains two, then the accumulator will be loaded with the contents of the address pointed to by STA and X.

This is not an addressing mode that you will use often but it's worth knowing about in case you have a need for it one day.

Just recently I introduced the use of conditional branching. At this point it was simple to allow us to make decisions and I made no attempt to discuss its length. It is now necessary to look in more some depth.

In the microprocessor is a register called the Status Register. This eight bit register is used to hold status flags such as zero bit. The flag field is as follows:

6 The Carry Flag (C)

This flag is used to carry information on which arithmetic operations are performed. For example two numbers are added to give a result greater than 256, the

carry flag is set so that you can take appropriate action. We'll discuss this when I deal with 8-bit arithmetic.

11 The Overflow Flag (V)

Only the last seven bits are used for holding data, the eighth being a sign bit. Hence only numbers in the range +127 to -127 can stand. If an operation attempts to store greater than +127 then the overflow flag goes. Again we'll discuss this later.

12 The Negative Flag (P)

This flag is set operation results in a negative answer.

13 The Decimal Flag (D)

This is set if you wish to work in decimal (BCD) mode.

14 The Intercept Flag (I)

Indicates an interrupt in progress and the zero flag (Z).

Set if an arithmetic operation involves zero itself.

The last four characteristics are the states of a flag and are accordingly the instructions provided are:

SET — branch if carry flag is set

CLC — branch if carry flag is clear

STC — branch if zero flag is set

CLZ — branch if zero flag is clear

SETC — branch if negative flag is set

CLN — branch if negative flag is clear

STNC — branch if overflow flag is set

CLV — branch if overflow flag is clear

SETV — branch if overflow flag is set

CLN — branch if negative flag is set

STNP — the compares the accumulator to data or the contents of a location

CMP — compare the register to data

CPS — is analogous to CPI

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- Micros II includes a built-in editor which allows you to edit existing programs, add new programs, or delete old ones. This makes it very easy to add new features to your programs without having to write them from scratch.
- Micros II includes a built-in editor which allows you to edit existing programs, add new programs, or delete old ones. This makes it very easy to add new features to your programs without having to write them from scratch.
- Micros II includes a built-in editor which allows you to edit existing programs, add new programs, or delete old ones. This makes it very easy to add new features to your programs without having to write them from scratch.

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P Green brings you
some hints on saving
time and memory.

DATA, TIME AND MEMORY CAN BE KEPT ALIVE IN BASIC when a Basic program contains lots of numerical data statements. This article suggests ways in which you can save both time and memory copied from resources.

The Facts and Figures

If you have a lot of numerical data to be stored, there is a fairly quick and easy way to save time and memory. Save the block of memory straight on to the disk or tape and let the basic program to load the data straight into memory instead of POKING it in.

This is saved by this method because when you use DATA statements within a program, you must first load the data cell into memory and then run the program to POK the data into memory. It takes 12 seconds for the ten bytes of the tape address and 12 for the second half for each 10 of memory when using a 16 bit drive. Alternatively to reading the data straight into memory from disk takes only five seconds for each 10 of memory. Of course, the savings is much greater if you are using tape since tape loading is a much more lengthy process.

Memory can be saved both in the computer and on the disk or tape. In the computer 16 of directly assigned data of course takes up just 16 of memory. On the disk or tape it takes up between 18 of storage space. On the disk, this is two blocks. In the case of the data statements, however occupying the 16 of memory over the program that does not, the Basic data also takes up memory - just under 16. Although this method actually uses just under 16 of memory. On the disk or tape, it takes up well over 18 of storage space that is 18 blocks on the disk.

Saving the Data

So, finally, how can we save a block of memory? And secondly, how can we get our Basic program to load it again?

DATA, TIME AND MEMORY

This can be done in two ways. You can use a machine code routine to save an amount of memory. To do this you will have to get the user address of the block of memory that you wish to save and then calculate the low and high bytes of the start of variables which is normally the end of the Basic program plus one.

Four machine code lines of course, need not occupy the same area as the memory which you wish to save.

The procedure should be as follows:

1. Load and run the Basic program, or at least the part which POKs the data into memory.
2. Run the Basic program and load the machine code editor.
3. At most machine code numbers, the instructions to save a block of memory is something like:

```
      LDX #1000 CDE0 00
```
4. This will save the block of memory from \$0000 to the user address in ROM. The first address is the byte address on a disk drive with the device number of 0 or \$0 hex. (\$0 for tape, while a monitor is \$0000). If you choose the monitor although this is not actually used for this method on tapes.
5. You may need to give more than one block of data. For instance a block of character data at 10000 and a block of machine code data at 10100. As you need to do the file to save repeat instructions see for the new block of data, leaving in mind that for data, you will need a different command.

Another and possibly easier method is to place certain parameters in the zero page of memory so that you find the block that you wish to save. A block that you wish to save is a Basic program. The locations to save are 41 to 48 inclusive. Locations 41 and 44 are the low

and high bytes of the start of name block will be loaded again and again.

The first way to do this is a copy of the full program, data statements and all. In case long goes wrong, and keep it safe. Next, remove the data statements and the \$1000-POKE routine and save the tape, and save the program again.

The first line of the program can be used to save the block of memory by using a line such as:

```
      100001 00100000000000000000000000000000
```

Two lines are the same as the one you used to save the block of memory. If a tape is used, then first change the right address, and then don't use a monitor. The right one after the right of course is required so that the block of memory goes back in whence it came.

If this is more than one block of memory to load another one needs to be added, as follows:

```
      100001 00100000000000000000000000000000
      100001 00100000000000000000000000000000
```

Do not use a monitor. This will load the last two blocks of memory loaded on the tape. The way in which the loader works is as follows:

1. After the program is run, \$0-\$8.
2. At line 1, it becomes 1 and the first and taken place.
3. When the load one program starts again at line 10 for the variable it will be 1. Therefore it becomes 2 and since this is not equal to 1, the program continues to the next line.

4. This will go on until all the blocks of memory have been loaded and the rest of the program can continue.

FONT FACTORY

Evelyn Mills looks at a new product from Impex.

THE FONT FACTORY (F) is APLT/ named and works had for you, during storage at your request.

Firstly the requirements are a disk drive, printer and word processor. The printer should be preferable to the Commodore Vic 20/30/40/50/60 although descriptions are given for using a printer interface exploiting the VIC-20 or 50. It is claimed that F will work with most word processors with open supported files and I have used Impex throughout with no problems. However it would be worthwhile doing a double-check with the distributor before purchase if you have another word processor in mind to make sure.

Noteworthy there is no manual supplied with F, instead the programme gets to work right away providing full instructions using the directions given. The resulting 10 page manual is in two parts, one for font factory and one for Signwriter II. Both are very well written and the full scope of what the programs can do is explained - no hidden complexities here!

Before using F create a file document with your word processor and save this to disk. There is no necessity to use the commands of your processor other than direct typing mode. However, and this is most important - save ASCII codes. After the beginning, followed by a percentage sign, you wish to use a different font in the middle of your document, enter a new font header followed by pressing F. Use right on both lines with which to print yourself.

Having saved your file to disk, load F and let's take over. Initially I suggest that you just open there to print your document. There are plenty of screen instructions to help you along, thoroughly professional and you'll soon be printing your first font header followed by characters from A to Z of eight, these will then be prepared for you. The second font you will then be responsible and F goes back to work. Whenever you have determined a number of fonts on your document, a single return will tell you so the next

option. If you select the parameter given on the screen (a good idea initially) insert your document when told to do so and F will print your letter in the font selected very simply indeed and very attractively.

There are eight in built fonts including Africa, Bold, Roman, Gothic and most importantly all the Signwriters. These give you true type face of a high quality as its name implies.

F is full of options, using control or double width letters and has a very comprehensive list of embedded commands for ordering, setting line width, left and right margins, repeated page numbering, and line spacing. All these commands are specially created commands. Fonts may also be changed within your document itself if necessary.

More to come, you may define your own font names and font numbers. The whole program is extremely user friendly and 10 fonts may then be accessed at any one time within your document including the in built fonts. Font selection is done via menu, icons and readily handled.

In either you can create an entire alphabet set or change characters from an existing set. If you do not like the A in Gothic font then change it if you want to change the Gothic alphabet - it's that simple.

F also has a separator program which enables hyphenation (particularly useful again instructions are readily handled) when complemented with the manual. This function, independently of a word processor character widths are retained. Since as Double width and the computer has two options, one selects print according to the previous character in your string while the other selects ruled line printing mode - the most suitable method width prints a banner around two feet long. F will stop the printer if you have been too enthusiastic.

As an F font may be changed and stored on that, there is no standardisation of signatures.

I see no problems, in this programme, consider it excellent value for money and though if you will be disappointed with its performance.

A really professional tool, agreeably priced and certainly 'here to stay'.

FACTORY

Scratdipad

**Our research group
prioritizes children
with ADHD symptoms
and their parents.**

This month we are pleased to print three short witty programs. The first of these comes from Steven Freeman from Oshkosh and is a 10-unit.

How often have you heard to be a program at the screen of your C16 only to have the last of the screen scroll off the top of the screen before you could read it? C16 users can eliminate this by pressing down with the C16 key but this program will make screen's keys realize about the speed of the C16 command by changing the last words so that it jumps to a short machine cycle routine in space memory locations 6700 to 7000. Line 10 of the Basic loader contains the POKE that alters the speed of the box so you can change the # assigned. The other controls are:

- 11 To pass the ball,
 - 12 To throw the ball.

For all of those people who have started machine code programs, no tape code is larger where they load in memory. Mr. R. Phipps, from Radio Electronics has provided an extremely handy Tape Header facility program. The routine is very handy for loading a machine code program and trying it out.

This routine is called on a machine code call to the kernel macro which searches for any header in a program. The information is then stored in

Digitized by srujanika@gmail.com



FROGGY

Daryl Bowen shows
you how to kill the
frog!

REGCODE AND TO: The reg of the frog. This must be set by adding the register which controls the status panel at the bottom of the screen, and the routine which kills the frog. Although the latter will not function until the checking routines are added in the next issue.

Info

The routine begins by placing the value of 10111 in the status panel CMDFL column, which starts the frog's crawl cycle and a dual PKEY = 1, then we exit from the routine.

The next four instructions place the values in REGD and REGDH and the following seven use the R register as an index to point to the low eight of METR05 and METR06 and to place them correctly on the screen.

One of the features of the game is that it becomes more difficult as you progress, and this is achieved by increasing the speed of the frog and the HX. Their speed is increased by a small amount every time another 100 points is scored. The first four lines set the parameters for the first instance of the race into METR05. The code which enables all the increase in speed appears later in the routine.

Lines 10000 to 10100 decrement the reg tree entry METR05 and METR06 so as to check whether another insect has passed. If no further jump to 1000, which simply returns from the routine.

The next eight lines set the X register as an index to increase the METR05 value if the sign being compared matches one of the previous six values plus 100 (the thresholds are 10, 20, 30, 40, 50, 60). The next eight digits are increasing METR05. Because the same switch as pkey=1 is set, we

1020 1000V .10001,10004,10001,10003,10003,10002

| | | | |
|-----------|------------|-------|------------|
| 1030 | JTH_PLAYER | 10210 | 1 |
| | | 10220 | |
| | | 10230 | 1 |
| 1040 | JTH_REGD | 10240 | LDA METR05 |
| | | 10250 | STA METR02 |
| | | 10260 | 1 |
| 1050 | 1 | 10270 | DEC PKEY+1 |
| 1060 | 1 | 10280 | LDA PKEY+1 |
| 1070 1080 | | 10290 | CMP PKEY+1 |
| 1080 | 1 | 10300 | BNE EXIT0 |
| 1090 | 1 | 10310 | LDA PKEY+1 |
| 1090 | 1 | 10320 | STA PKEY+1 |
| 1100 | LDA L100 | 10330 | DEC METR05 |
| 1110 | LDA REGP | 10340 | LDA REGP |
| 1120 | LDA METR01 | 10350 | DEC PKEY+1 |
| 1130 | LDA REGH | 10360 | STA REGH |
| 1140 | LDA METR02 | 10370 | 1 |
| 1150 | 1 | 10380 | STA REGH |
| 1160 | LDA REGD | 10390 | 1 |
| 1170 | LDA METR03 | 10400 | DEC METR03 |
| 1180 | LDA METR04 | 10410 | STA METR04 |
| 1190 | LDA REGH | 10420 | 1 |
| 1200 | LDA METR05 | 10430 | DEC METR05 |
| 1210 | 1 | 10440 | STA METR05 |
| 1220 | LDA REGD | 10450 | 1 |
| 1230 | LDA METR06 | 10460 | DEC METR06 |
| 1240 | LDA REGH | 10470 | STA METR06 |
| 1250 | LDA METR07 | 10480 | 1 |
| 1260 | LDA REGD | 10490 | DEC METR07 |
| 1270 | LDA METR08 | 10500 | STA METR08 |
| 1280 | LDA REGH | 10510 | 1 |
| 1290 | LDA METR09 | 10520 | DEC METR09 |
| 1300 | LDA REGD | 10530 | STA METR09 |
| 1310 | LDA METR10 | 10540 | 1 |
| 1320 | LDA REGH | 10550 | DEC METR10 |
| 1330 | LDA METR11 | 10560 | STA METR11 |
| 1340 | LDA REGD | 10570 | 1 |
| 1350 | LDA METR12 | 10580 | DEC METR12 |
| 1360 | LDA REGH | 10590 | STA METR12 |
| 1370 | LDA METR13 | 10600 | 1 |
| 1380 | LDA REGD | 10610 | DEC METR13 |
| 1390 | LDA METR14 | 10620 | STA METR14 |
| 1400 | LDA REGH | 10630 | 1 |
| 1410 | LDA METR15 | 10640 | DEC METR15 |
| 1420 | LDA REGD | 10650 | STA METR15 |
| 1430 | LDA METR16 | 10660 | 1 |
| 1440 | LDA REGH | 10670 | DEC METR16 |
| 1450 | LDA METR17 | 10680 | STA METR17 |
| 1460 | LDA REGD | 10690 | 1 |
| 1470 | LDA METR18 | 10700 | DEC METR18 |
| 1480 | LDA REGH | 10710 | STA METR18 |
| 1490 | LDA METR19 | 10720 | 1 |
| 1500 | LDA REGD | 10730 | DEC METR19 |
| 1510 | LDA METR20 | 10740 | STA METR20 |
| 1520 | LDA REGH | 10750 | 1 |



WILLIAM, as he clung to his
spine those little paws were silent.
The distance that stage had
travelled before the day was
ended was measured.

The same principle applies to increasing the rates in order to obtain 1000 and increasing 5000.

Which brings us to DICE's
the value of **NETWIND**.
This is different to the current value of
MCWIND, when it is time to
increase the value which
control the speeds of the **BIRD**
and **FLY**, **BILBOAD** and **FLIPPER**.
Finally there are **deceleration** values
that then values have
not decreased too far.

Digitized

The relative parts the dry weight and decomposed live weight of each

The first step is to check whether the available CAPP parameters will fit the solution entities which we will use next.

Learn 1880 to 1880 set up
the space definitions to point
to the correct species not in
the 1888 to 1889 year set
to the correct. I used 10
indivisuals of the frog the which
look pretty silly looking at
one and kept the others in
the same place. The first 10 were

Now the interesting bit. Remember the *intra-epithelial* handling routine. However, that we noted in the second and third pilot studies, we now think best to ignore the epithelial cell surface, since apparently the background would move past the test.

To stop this from happening we must stop the marriage between 18114 and 18119 so that all the members there will be single.

The rest of the section is
single-line follow-up, and doesn't
mention Loris, just says regard
the place, power of the
example, right person to set
her well. My problem is set
her up.

The last papers of each figure, T1000 onwards, are sample loops used by the program.

LANGUAGE

LAB-C

This month David Janda

begins a look at C — a very versatile programming language.

C IS AN APPLICATIONS LANGUAGE That's used by programmers to solve a variety of problems such as text editors, programming utilities and much like. It is also the "language of the day" in the micro world. Partly because of the popularity of the UNIX operating system (of which C is the language) and partly because of advantages such as its compactness, portability and speed of execution.

The good thing about C is that it is a language for programmers. Many programming languages are designed for consumers, but can C be given its popularity not because of any hype or backing from a government (as the USA has backed Apple), but because programs need C?

So what is C, what can you do with it, and how good is it?

Why C?

C has many virtues. It is a modern language which incorporates modern control features. It is often a compact language. C can be applied to small programs such as the 6510 assembly code that I previously mentioned and free. Another benefit of C is that it is portable. We have all heard claims that the language is open-source, only to discover that a major rewrite is necessary before a program can be run on a different system. But with C it really is portable, between different computers. All you change to the source code are expressions, or usually merely adding a function or a header file which can recompile the main program.

For those of you who are interested in the "real" world of programming, it is worth noting that C is the programming language of the UNIX operating system. UNIX is already an accepted operating system in the PC world, and the BBC have decided to adopt it as their official operating system.

C is a compiled language. The program referred to as source code is first written using a text editor or word processor. The source code is then

submitted to the compiler, which, preceding there are resources, will compile the program into machine code and store it in files which is called the object code.

The steps in developing a C program are a lot more complex than what was mentioned above, but nonetheless you are roughly with:

C BASICS

Here is a small C program:

```
1 #include <stdio.h>
2 main ( ) { This is a demo }
3 {
4    int num;
5    num = 1;
6    printf ("I am a sample");
7    printf ("\n\n");
8    printf ("My favorite number is %d
9           because it is first in size");
9 }
```

This will print to the screen:

I am a sample
My favorite number is 1 because it is first

On a fine analysis, this is what the program does (note line numbers are not in C). Line one tells the compiler to incorporate information found in the header file. Every C program must incorporate at least one function, and line two indicates the function called main (the parentheses are there to identify main as a function). The open curly bracket identifies the beginning of the function body. Line three is a declaration statement, here the variable num has been declared of the type integer. In line four num has been assigned with the value one and line six to right print the output.

Last case indicates the end of the function.

The "%d" instructs the computer where and in what form the calculation results going to be displayed. The "\n" inserts one-line carriage return.

In next month's article I shall explain data types and control structures.

C Power V2.4 by Pro-Line Software Ltd

To the best of my knowledge the C power package is the only C compiler available in the UK. So far the only power has a cheaper package called Super C should be available from First Software. The reason for this longer than normal review is to give you an idea of what the package offers and its capable of, as it is the cheapest available.

On with the review. C Power is a complete C development package that will enable the user to produce stand-alone C programs. Most language packages are liable for the full tolling one of two categories: educational or development. Educational packages (such as the BBC version) do not offer a complete package that can be used to develop software. Instead the emphasis is on introducing the user to the language. Development packages (or the other hand such as QCS and QBasic Basic), offer an excellent package, but are not too good when it comes to documentation. I was therefore impressed with C Power because it's a fully-fledged compiler offering lots of features, as well as providing an excellent manual book that used in conjunction with the compiler will enable beginners to learn the language.

The package itself consists of a double sized disk which contains the compiler, shell, libraries and example programs. A 40 page user guide gives details on the compiler and very little else. The big plus is the C Primer Plus book that is also supplied with the package, and which can be regarded as a complete tutorial to C.

Implementation Details

One of the benefits of C is its portability, the ability to run C programs that were written on other machines. Because of this compatibility is an important factor when developing a C package. Pro-Line

has got a very compatible package with C-Power, but of course there are some differences.

In brief, the carbonates hydroxyapatite, $\text{Ca}_5(\text{PO}_4)_3\text{OH}$, and the well-known magnesium carbonate polymers may not be included except for character prints associated with strings, certain apparatus under certain conditions will not work unless the magnesium, and potassium ions. Most of these cations are not serious, and can be got around quite easily.

The following table lists the size, in bytes, of all the types supported by the compiler.

| Page | Page |
|-------|------|
| one | 1 |
| two | 2 |
| three | 3 |
| four | 4 |
| five | 5 |
| six | 6 |
| seven | 7 |
| eight | 8 |
| nine | 9 |
| ten | 10 |

Looking at the table, you can see that types `short`, `int` and `long` are the same, as are `float` and `double`. The practice is not uncommon in many implementations of C, but is a strange one. For a package of this price I would have expected to see `long` and `double` supported.

The library supplied with the C1660 computer is quite standard; however, it would have been a good idea to include functions dependent on the 48, such as some trigonometric and graphics functions.

Decomposition

The outer insulation is supplied as a length of paper which is stripped near the top

Front holes enable the manual to be fitted into a ring binder which is a good suggestion as my suggestion to fit it into booklets is a short while. The manual itself makes no attempt in teach or introduce the user to C – that's left to the tutorial book. Indeed, the manual provides information on the implementation of C, memory and descriptions of the editor, debugger, linker and so on. One section has the functions provided with the library that is part of the package. The majority of functions are listed with name, number, order and type, the function name, description of the function and an example. A good idea is that it enables the user who wishes to port C source from another machine, to check up on functions to see if there are equivalents.

The book 'C Primer Plus' by Wiles, Pratt & Harbord (Sams, \$19.95, 0-672-34000-8) is supplied with the C Power package. Quite simply it is the best language tutorial book I have ever read! The forty seven 12pt print pages take the reader from the concept of pointer variables right up to detailed discussions on C. In addition, it is well written in a friendly (and amusing) manner with plenty of illustrations, summary pages and so on. Even if you don't intend to get the C Power book, get this book!

© Power by Us

The user manual suggests that the system disk should be backed up. To do this, the shell, editor, graphics editor, linker and so on should be copied on to one disk. Another disk should be used to copy the top level of the system disk. This contains the loader, C and Assembler libraries.

The computer itself is always preferred (and very well thought) so more working copies are made; these files should be at hand. One containing the shell file, another the measures, and the third being the master data.

The SHELL is the first program that is run when using C Powers. SHELL itself is a multi-command interpreter. It supports command line arguments and I/O redirection along with the computer and other programs that are designed to work under it. The easiest companion would be BASIC's screen editor, which can be used to develop, edit and run programs as well as issue OS commands (such as cd directory, opening files etc.). The command available from the Shell are listed in Table 1.

Introducing some C source code here requires the editor to be loaded and run. This is simply done by entering `edit` (especially followed by a file name if no editing file is to be attempted). The editor is a very comprehensive set of tools that provides the user with considerable freedom about the text buffer. Once the code is written it can then be saved to disk. A syntax checker is also provided which checks the syntax of a C program. The program is loaded in as it is being checked and will stop if an error in syntax is found. If this is the case, a couple of key presses and you are back into the editor at the place where the error was found. Needless to say that the editor, syntax checker and all of the other `vi` commands are present in C.

The next stage is to invoke the compiler by entering or filename. This loads and runs the compiler which produces an object module.

The first step is to load and run the linker. This will produce a relocatable file and three sections are available. First, it is possible to produce a C program file and run under the Shell (just like the Shell command). It is also possible to specify a starting address, this means that the C program will have to be loaded and a SFS call made to the starting address. The third option is no produce a file, then parts are run as a part.

卷之三

- | | |
|--------------|---|
| <i>l</i> | list work disk directory |
| <i>ls</i> | list system disk directory |
| <i>mv</i> | switch file from work disk |
| <i>mv</i> | remove file on work disk |
| <i>pr</i> | list contents of a file on work disk |
| <i>rdisk</i> | used command switch to work disk |
| <i>load</i> | load, but not run, command from user or system disk |
| <i>work</i> | show current drive and three numbers |
| <i>sys</i> | as above but for system disk |
| <i>ed</i> | load and run editor |
| <i>ccl</i> | load and run syntax checker |
| <i>cc</i> | compile C source |
| <i>link</i> | ... see below |

rights. All the requirements are followed by arguments such as the majority about an

Giornate

Without a doubt C Power is every potential package. It is quite feasible that it can be used to develop commercial programs, and its numerous features give the user a great deal of flexibility.

The only downside with C Power is its price. It's a very expensive package, and I would have appreciated such things as more CDA dependent functions, longer strings and possibly more than three buttons.

Having said that, I'll pass the outweigh the costs, and I would recommend the C-Power package to the source as well as the receiver end.

William Fung adds a title menu palette to your App

BETTER --- MATRIX

The 17th of May and
18th. We had a very
fine time at the beach.
I am now in the
middle of the day, and
the sun is very hot.
The water is very
cold, and I am
very tired.

Once the program is memory you can run the master by typing `run`. Then type `help`, `info` or `about` to receive better message. A `help` command page should be displayed showing you the simple controls that are needed to run the program.

Training In Out

When everything is working
properly the final program is
Figure 2. Now print function
key 3 which will give a blue
border and run the program.
Not very fast at all.

Please print letters less than 12 words apart to save postage and B&H fee per envelope. The more the letters will cost the same.

Better results should therefore give a better appearance to many of your products. However, as many words, pictures, or designs, it is impossible to say whether a particular print will appear like poor machine. At present better results can be obtained by using **ECO-PRINT** as it will definitely not work with prints that are less than 100% memory.

THE CONGO DOUBLES with an unusually popular price because of its cheap price. It has only after the occasional company listing that it is quite adequate. A problem arises however if you wish to eat the 100% BKT or provide quality and wages at one of the lower cost centers have decreased. This means that a better, I would say, at the same time as a better, a thin, makes it very difficult to shell large amounts of money.

If you want to track the
activities of a particular user,

processing and are thinking of
marketing to water M&P's R&D and
partner with a single organization.
There has to be a reason.
Before you take any major steps
of your deposited funds, it would
be a good idea to consult with

In these cases a helpful method before adoption often is to make the head of partitioning or the more experienced person (either lawyer or CPA) present. Then one part of the letter is passed to that person, given back over the writer and added the missing parts of the letter (as the page). No longer necessary to do.

By comparing these two sets we can obtain an acceptable joint resolution of 18 days. Obviously, this does not represent a definition of the character, as longer R&D times, if at all possible, will be more satisfactory with decreases. I use a lower figure, 1 week, during my normal process of testing and comparing it with that of the results.

However, printing in two columns does have a disadvantage. As the printer has to measure each line of text separately when it takes a lot longer to print out any text this is usually inferior to the MPS-801, but all MPS printers suffer from the same way. On the MPS-801 the speed is reduced from 50 characters per second to 35 characters per second.

Edition 11.1

Better results in quasi-parallel
the program is all in machine
code but is presented here in
the form of a Fortran 77

COMMUNICATION

If you've never heard of bulletin boards or you just want to know how to get on one - read on. David Janda shows you how.

I HAVE BEEN AWARE OF DOMAINING Communication since well before the BBC Micro. Well, as presented here, it is a relatively recent development in the subject of bulletin boards.

A bulletin board (BB) network was first developed in a community bulletin board. A BB is usually run by a hobbyist or has been set up specifically for a home study with disk drives and auto-answer modems. A BB will allow one user at a time to browse through the files stored on the board. These can include messages from other users, general information, special software, news items if you can put it on a BB.

Compared to Telnet or CompuServe, I have to admit, these amateurish BBs are not technically brilliant, but they are by no means crude. One of the best things about using different BB's (just walking) is that they are not bureaucratic efforts of one big company makers - and that makes a difference!

What Type?

The UK currently has over 200 BBs that operate at regular times, and the number is growing. There are basically two types of BB from which to choose. The first is the traditional bulletin type of BB. To access this you will need to connect your computer (either via a serial port or a parallel port) to a local

computer called. After setting paths to include this type of facility in case you are a 'modem' (modem) user who does not have this type of package, look for on-page options in E1.30 should get you going. Computer users can purchase TTY which is £11.68 for 24.96.

This type of software does not just give you on-screen graphics, it also enables you to log on to most types of BB.

The second type of BB operates on video-based (monitor-based) terminals. This type of board presents information with colour and on-screen graphics in a page format. Although, modem subscribers will not need to buy any additional software, all Computer subscribers will need the latest VERSATILE program at £19.99. Again, as with the standard software, most computer software has a VERSATILE mode.

Which Modem?

Most of the BBs are run at 300 baud. This means that you'll need a modem such as the Voyager 7, Nightingale or Multi-modem from Memorex Technology. All these modems will also allow you to access boards at 1200/1500 FSK and provide features. CBM modems cannot run at 300 baud due to memory faults now allow access at 1200/1500 baud, and these now operate at 1200/1500.

What's There?

Each BB has its own unique character. But most have an E1.30 (Electronic Bulletin option) that enables you to send and receive messages. These messages can be private, i.e. to another user, or be posted on the general board for everyone to see. Other features on BBs typically include free, downloadable software. Downloading is done in several ways, but by far the most popular is the BBS-to-BBS feature, so check to see if your current package has this option. Another common feature to be found on BBs are the SBCs - special

Interest Groups. These are areas which contain information on one particular subject or interest group, published whenever.

There are many other facilities to be found on BBs. Some even have on-line adventures that you can play.

When using a BB, it's worth remembering that the person which you are using is here say, Britain, it's up to you, the user, to help supply the board with information. Have you got any software you'd like to share? That's the aim of the system Operator (SO). SOs set up an SG dedicated to CompuServe machines. Here is just one from already!

The List

Opposite is a very small selection of BBs that are currently in operation. All the boards listed operate on a 24 hour basis. This means that you will need a Modem type telephone to access the board. 1200/1500 bauds are needed including type software and a modem such as the one from CBM, to access the service. Initially 300 baud 300-150 baud servers which need no modems. CBM modems can still NOT be able to access this type of server.

All the boards listed have a section which contains phone numbers for other boards. Have fun!

What About the 64?

To the best of my knowledge, there are only three bulletin boards which are run on the Commodore 64. One is in Aylesbury, the other is based in the West Midlands. No doubt there are quite a few in the place the 'Ukip' BBS which I shall check out more myself. I also understand that there is some public domain based BB software knocking about, so I think I shall also track down. As you can see below, running a Bulletin Board on a C64 is perfectly feasible.

COMMUNICATION

CORNER

| Name | Telephone | Date |
|------------------------|---------------|------------------------|
| EDEN | 0171 291 306 | 100 |
| Edensoft Ltd. | 01 216 8123 | 1/2/89 |
| Centraflex | 0208 464 726 | 1/2/89 |
| C-Voice | 071 544 371 | 1/2/89 |
| PCB Solutions | 071 200 0033 | 100 |
| Computer At Home | 01 264 0046 | 1/2/89 |
| Haynes M&S | 01 264 1023 | 1/2/89 |
| Hawking Thunders | 0171 264 0271 | 100 |
| Urgentcom Ltd. | 01 264 0228 | 100 |
| London 85 | 01 403 0007 | 1/2/89-1/3 |
| London Underground | 01 262 22195 | 1/2/89-1/3 |
| Micron | 01 241 1719 | 100 |
| Malvern 12 (Liverpool) | 051 420 2214 | 1/2/89-1/3 |
| Microtel | 01 760 4221 | 1/2/89 |
| Monsoon | 0816 200001 | 1/2/89 |
| TBBS Broadband | 0256 244994 | 100 |
| TBBS London | 01 264 0006 | 1/2/89-1/3/2/89/1/3/90 |

Below is a printout of part of a screen for Micro-Random which is on 34 bus, a 640x200 resolution 600x200x16, eight disks, no parity, 512K RAM, 147.12M worth x 1000 disk drives. The 240K of software was written by Noel Fawcett. The group said the files have corrupted, but had not.

The time is 10:15. One message loading SPACE (All-pause/restart), CTRL X-key with Alt key down (1)

2 Main Menu loaded into C: Goodbye/Avg-all H-Help with the cursor M-Managing Data U-User log T-Tell for SYNDP

20100 Main Menu (1)

1-From the menu open

1/2/HOME/1,2
or 1 for menu (1)

The time is 09:10. One message loading SPACE (All-pause/restart), CTRL X-key

20100 Managing menu

| Name | Telephone | Date |
|--------------------------|-----------|------|
| C-General messages | | |
| 3-Help with the cursor | | |
| 4-From the menu open | | |
| 5-Syndp message to phone | | |
| 6-Copy Main Menu (1) | | |
| 7-Main Main Menu (2) | | |
| 8-From the menu open | | |
| 9/HOME/1,2 | | |
| or 1 for menu (1) | | |

The time is 09:10. One message loading SPACE (All-pause/restart), CTRL X-key with Alt key down (1)

20100 Main Menu (1)

or 1 for menu (1)

The time is 09:10. One message loading SPACE (All-pause/restart), CTRL X-key

20100 General messages

C: Check Mail

20100 A message from Mr

H-Help with the cursor

M-Managing Data

Q-Quick icon of messages

R-Read message

S-Send message

L-Lesson Menu (1)

S-Main Main Menu (2)

COM IN/OUT 5/7 6/7

or 1 for menu (1)

One message loading

One message 1/1 Last message 0/1

Message number: [Blank]-[10] <QB>-000
1/34-31

One message loading
Message 14 [opened] 10000

MESSAGE TO: ALL
MESSAGE FROM: TERRANCE MACDONALD
SUBJECT: ANOTHER CRM MISTY
DATE: WEDNESDAY 26/2/91
USER: TA A - CRM MANAGER

Hi folks! I have set up a 386 in Dublin, Ireland, running on a Commodore 64 with W32000 and 3 disk drives. I am a heavy CRM user. The 800 software (by myself) is called SQUID. It is an interpreted - no manual. And it is all in machine code. Give it a ring and you will see. It is QBasicish software. It is something to see another 800 running on a Commodore 64. After what does all think of the new 386 1000 CRM disk drive with 1000K per disk!! Anyway, just found it's too slow for the task. Advanced Computer Club is called the 100 CLUB and my Dublin branch (44 Hounds on 8 bits, not just 1 ring, 1000 baud).

1/2/HOME/1,2/7,1,2
or 1 for menu (1)
One message loading

Last but not Least

Well that's it for another month. I shall be reverting to fixed line modems and some colour packages. Finally, a special mention to Richard Jardine (CRM 1/8/91) who wanted his name to appear in CRM magazine in the column feedback. So here's a longer to drop me a line on CompuNet (1014002222 or Postal 90909097)

CORNER

STATESIDE

NEWS

★ ★ ★ ★ ★ ★ ★ ★ ★

Lewis Tilley gives you the update from across the Atlantic.

HAD YOU GONE FOR COMMANDOS the "warrior of discourses" - or just a number of the big issues? In the US programs like *Frozen Throne* from Credco, and *Impact* from Starpoint Software, seem to reflect in their names the low point reached by Commandos' stock. It's another solid half-decade at its lowest level ever since, down from an all-time high of \$8 on the NY Stock Exchange.

In this great company on its way out, can a company that has sold over four million units of the CIA in each model (just this past Christmas) it is announced that 80% of the sales were of the old reliable, that the CIA was so popular that an official shortage in the CIA was created by holding back supplies of them in the case room. Other sources were that the CIA was "overhauled" in order to meet a price cap for an introduction in a new series with some new features. The above rumors evidently are through the collecting of Edie Baskin who writes in about perhaps the operating computer support group publication in the US. "The New York Computer Exchange Network News" a published monthly in newspaper format is submitted, written by A. Cloon Bailey, 428 Clinton Avenue St., Brooklyn, NY 11205 USA. Based in the US \$1.00/year charge charge, that?

My contact with our group was greatly expanded by attendance at the 1986 West Coast Commandos Association Convention May 17 this February in San Francisco. At least 12 dozen groups were represented. Leading the field was the grand daddy of them all, the famous Pet Users Group, followed by such US giants as the Oregon based US Commandos Users Group P.O. Box 1910, Roseburg, Oregon 97470 USA, and the above mentioned NY group, plus no less than over smaller California groups along (and) in the show catalogue.

What's a mid-West Coast computer store that's jammed packed with people and programs? The people were a little older on the average than those few seen attending the show in Little Rock or the International Commandos Show at London last year, but they were definitely more like the (international) sort. Business types that I ran into in San Francisco at a IBM compatible software show that was being held at the same time.

Now for the programs which I mentioned earlier, earlier. Petter Petrie, Inc. 8005 Imperial, Whittier CA 90602 will quickly fit inside your computer, totally transparent to every program you may wish to load and use. Then when you want to make a screen dump you call it with two key strokes and watch the home screen and watch your printer. You thus choose to run whatever you may have as your main program.

There's another two different programs coming from the UK built called Imageset. Comes a catalog from CD-ROM Ltd. Comes a program written in machine language which can store whatever you have on the PET screen (up to 32 columns) and then retains it for display at his pleasure. The other is a cartridge named Impact II which comes from those fine people at CIMA Software, Inc., P.O. Box 244, Cypress Park, British Columbia V6R 2G2 who developed the best of the 1984 DINA Game Award Programs (thus the Version 2.0 at \$44.95 plus shipping).

Shipping all around the "old" (age) looking today since you are able to "download" any program after the protection check, and then replace it (totally bypassing the protection check). Payment for this utility is \$9.95 plus shipping costs.

Remember the exciting advertisement in Starpoint Software of Gaithersburg MD 20884? They announced a utility called STARDISK which would do everything seven makes game collect! Well, they were blocked from releasing it by a lawsuit stopped on them by 3M/US Electric Works, 2200 South Western Road, Houston Texas 77040. Styles says that it was too much like their pat-

entile TMS 11494 (\$19.95 + one disk plus \$7.50 UK shipping charges) which was developed by the same companies involved.

Starpoint is developing one of the biggest of the programs. They are marketing a 2000 BASIC board for the Amiga functionally identical to the Commodore 1600 BASIC board for \$39.95 + \$4.95 shipping outside the USA.

Impact, which is also a Starpoint product of STARPOINT, a combination hardware and software package which offers the full range of new utilities in "Macintosh" by capturing and saving the presented program as a new in the MAC memory. This "captured" (so help me this abomination) uses a "snapshot" (so help me this abomination) becomes accessible to the user for complete inspection and alteration." The quotation is from Starpoint's advertisement.

The mid-night modem madmen need insure. Commodore associated EQUIPMENT LINE is giving away a 300 baud external modem if you subscribe for four months, at \$6.95 monthly. Various charges you may search for a 300 baud Vortex 300 by Digital Accessories. They offer a 1-line interface on Vortexnet for free. Player gets a bit early in an advertisement offer of a magazine subscription to AMIGA, a Player membership fee and a refund of your subscriber to Player for three months and pay a flat time membership fee of \$10.95.

The show has certainly dynamized Amiga Hardware prices are falling and software is flowing from the developers like watered up maple syrup. The Electron Amiga Deluxe Print program begins to really show what this amazing machine can do in presenting visual data. What's more it integrates with the Deluxe Graphics Module and Printer module of the same company. The games have arrived via Right Hemisphere from Sublogic, Rapster in Waterfall by the now Software Systems and a re-make of the Software Golden Gobba's - Frog Bits, Adventure and tile from EA are available now.

The CIA is less popular in the majority of the programs designed especially for it. True, some very old programs are being updated such as Viscosity and Superkings. And now that Quantum has issued a new version of QPMM for the CIA, which really works this, all those wonderful old QPMM business programs are there for the taking.

I may be including mention of the PC 101 in upcoming columns of the newsletter by a PC user publication in US English, man for \$19.95. Information Services is true. Commodore is going to try and fit this business model with a wire service which is compatible with IBM machines. Then it will do the PC 101 in the US to others who will the service compatible with IBM and may even offer a link (modem) to the less fluent businesses who want to try this service. This will all be tied in with Quantumblock to give a truly total service as well as tie up all these small (and small) PC 101's.

Joe Nicholson
continues his look at
the C-16. This month
— clocks and timers.

IN THIS ARTICLE I SHALL ATTEMPT to explain some of the techniques involved in timing interrupts and so on. I shall start with the keyboard interrupt as this is the easiest to explain. Every 1/60th of a second the computer interrupt to normal processing to execute a service routine. This updates the clock and reads the keyboard, putting any new keys pressed into the keyboard buffer. It then resumes processing. The address contained in bytes \$00H and \$01H are the low and high bytes of the index values for the location of the interrupt. These values can be addressed in order to execute the jump to your own中断处理子程序. This technique was used in the play routine and the synthesiser code explained last month. After the user routine has been completed, the program can then jump back to the service routine to update the counter etc. Alternatively it is possible to jump straight back into processing.

The interrupt is normally set by the machine code instruction \$I which has the interrupt off and CLI will turn it on again. The following routine will set the interrupt vector:

```
$I    interrupt off
LDA low byte
STA $004
LDA high byte
STA $005
CLI    interrupt on
RTS    return
```

Similarly to remove the original interrupt:

```
LDI   interrupt off
LDA $004
STA $004
LDA $005
STA $005
CLI
RTS
```

Note that most of the programming associated with interrupts has to be done in machine code for speed. In fact it is not possible to disable the interrupt from BASIC. At the end of the user interrupt routine, see the assembly routine shown

PROGRAMMING THE C16

to the service routine. To jump back from the user routine to continue processing, ignoring the C-16 service routine, set the two indices (\$00H and \$01H) to zero. I won't include a demonstration of this type in the play command published in the December 1984 article, as sound, and the sound synthesiser article published January 1985 serve as fairly good demonstrations.

Internal Timers

There are three internal 16 bit timers in the C-16. The timers operate at a frequency of 100 KHz, or one PPU system clock. Each timer takes 0.001 seconds to count off the step from \$0000 to zero. Timer #1 has the facility of being able to cause an interrupt upon reaching zero. Both timers are arranged at two eight bit registers in memory, using the standard protocol of high byte, low byte, multiples of 256 less preceded by the low byte (processor \$0-255).

The registers are arranged as memory as follows:

| |
|---------------------------|
| \$0000 Timer #1 low byte |
| \$0001 Timer #1 high byte |
| \$0002 Timer #2 low byte |
| \$0003 Timer #2 high byte |
| \$0004 Timer #3 low byte |
| \$0005 Timer #3 high byte |

To set a timer simply load the timer's register with the target value, or will then count down to zero. As the timer will obviously have to be set in two parts, just \$0000 or \$0001 for the low byte and one for the high byte, they should therefore be a delay of no greater than 128 as between zeroes, the low byte and the high byte, otherwise the timer will start to count down and therefore be set incorrectly.

To alleviate this problem therefore, the timer registers should be set in machine code using the following type of routine:

```
LXI D, #0000      ; Set up double word
MOV A, D          ; Load into A
MOV B, D          ; Load into B
```

otherwise to occur between writing the low byte and the high byte:

| |
|--|
| LDA low byte of timer |
| LDA high byte of timer |
| STA high byte of timer |
| CLI save the interrupt back on RTS return |

The Timers and Interrupts

Timer #1 is a more sophisticated timer than timers #2 and #3. When the timer is written to it is reset to its previous value as requested, but also sets the timer #1 could register that value. The timer then counts down to zero, at which point an interrupt is generated. At the time of the interrupt reading a set bit causes the interrupt status register to then zero. The user is then free to read the related value, and the counter carries on decreasing until it reaches zero when another interrupt is generated etc.

Timers #2 and #3 are potentially a very useful timer allowing periodic interrupts at specified delay length. The timers are used to generate automatic batchload station tape loading systems which is under development.

Timers #2 and timer #3 are implemented. These timers get back to \$0000 after they have reached zero, instead of being reset to a related value. They still have the ability to generate interrupts when they reach zero however. To turn interrupt for timer #2 on/off, move them in the # of the interrupt mask register. When the user routine runs place, the # of the interrupt mask register is set high.

The Interrupt Mask

The interrupt is turned on and off by setting/resetting bits on a register called the interrupt mask at \$00A. With one re-

set to control the following:

| |
|----------------------|
| #1 timer interrupt |
| #2 timer |
| #3 timer 1 interrupt |
| #4 timer 2 interrupt |
| #5 timer 3 interrupt |
| #7 interrupt request |

Setting a bit high on the mask bytes will enable the appropriate interrupt via a logic gate. There is no connection for a logic gate on the edge connector, but these may be on the printed circuit.

The Interrupt Status Register

The byte at \$00B or \$029 describes which interrupt has occurred. It is important for the interrupt service routine to know just which interrupt has been used so that logic can be used to flag logic based on the arrangement of bits in the register. The same is the case in the interrupt mask register (as the bytes in the mask #1 interrupt first). Similarly to set a bit on in this register, write that bit with a one to every bit. Any interrupts from the C-16 are recorded by the C-16 setting the appropriate bit of the register.

Timer Interrupts

In trying to note that the three timer interrupts can still be used even when the timer and interrupt requests have been disabled with the \$00 command. This is the technique used in the saving and loading of programs for the C-16. The routine at \$0304, for instance, Figure 1, is used before loading, having a block/boundary in the C-16. The routine at \$0302, shown in Figure 2, is the opposite of the routine of \$0304 and is used after loading/seeing a block/boundary.

However it is not always necessary to perform timing exercises using the modified

128

Common errors

BIBLIOGRAPHY

1980年1月1日开始执行的《中华人民共和国个人所得税法》规定：

| | | |
|------------------------------------|-------------|------|
| ■ Autelis Diesel 100 | per 1000 m² | 1000 |
| ■ Autelis 100 "Trockenfest" | per 1000 m² | 1000 |
| ■ Autelis 100 "Standard" | per 1000 m² | 1000 |

Supplementary

and the following figures are given for each country:

七
第一輯：政治、社會、經濟



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Yearbook

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| 352.0 | 352 | 10/10/00 |
| 353.0 | 353</ | |

卷之三

1

Calco
Chemical

Bill Brenner begins a series designed to help you get the most out of your disk drive.

BEFORE I TRY TO EXPLAIN HOW THE 1541 Disk Drive works, let us discover what brought about its unique design and several some of its peculiarities.

Most modern computers employ an allowing all devices reflect successive Happy Disk Controller or FDC to connect up to a disk drive. A software package called a Disk Filing System (DFS) or Disk Operating System (DOS) is then loaded into RAM or plugged in to ROM and increases the controller to perform such tasks as formating, reading, and writing. Of course, the more complex the DFS or DOS required, the more space is taken up inside the computer (the BBC, many uses the popular MSX1 version, Apple and Amiga both load their software into RAM). There are quite a few advantages to using this type of system, fast loading and saving and a variety of increasingly complicated and advanced games. However, the problem can memory usage exceeds the

PROGRAMMING THE

1541

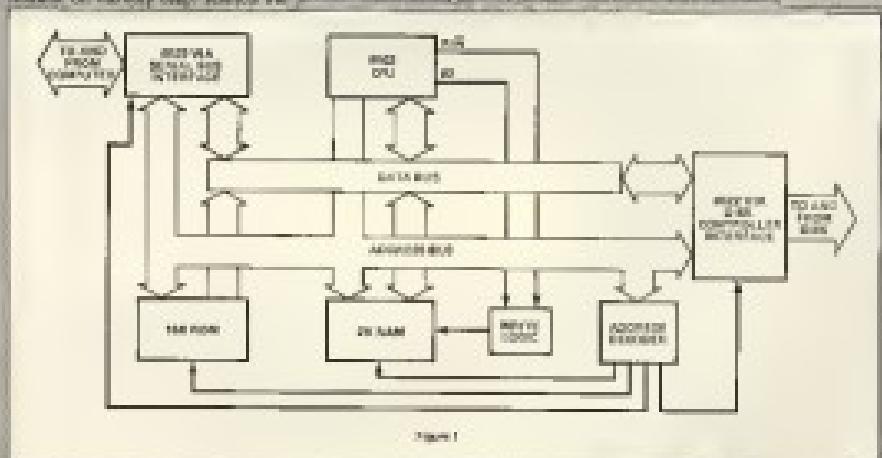


Figure 1

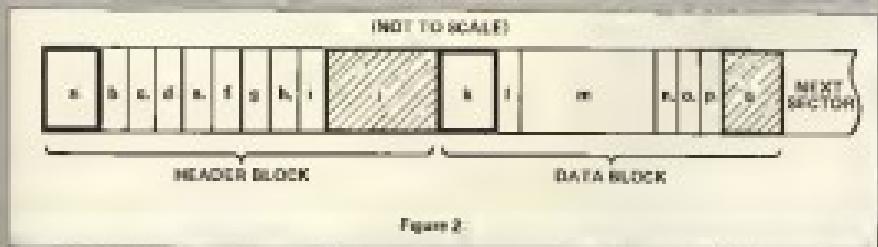


Figure 2

versity of supporting software, data storage and write efficiency and incorporated to produce an alternative multi-head party tape interface.

The 1941 Disk Drive evolved from the 1938 which was designed for the VME, and because of the limited amount of memory in the VME, the memory had to be read sequentially, not parallel. This, and a head quite a long time to settle down, thought to be a dual-channel, but after all, anything was better than tape. When the 1941 was used on the home computer scene, it was decided a new data drive should follow such as, but at the 'lowest' cost selling, the new drive would have to be compatible with the 1941, so it has the 1941 and those with bugs, but relatively cheap, efficient and pretty reliable.

Because the drive is intelligent, and thus self-supporting, there is no need for either disk controller or dedicated disk interface boards like that. The control and track 1941 is a SCSI based computer, much like the Macintosh with RAM, ROM and bootstrap chips. This means that at the end of your serial lead is a fast storage device which will handle everything, as it is programmed just like the same as the home computer is programmed to.

Inside the 1941

If you are prepared to open up the 1941 you will find relatively little inside that looks like a computer. The circuit board, using the metal case as ground and the drive mechanism contains the control electronics, the interface and several complex circuitry in the back. This is much more spacious than the Mac in its boards, as it needs another radio for most related chips. Four SCSI Yentec Interface Adapters handle serial bus communications and control the drive mechanism, as well as supplying timing and interrupt handles for the processor. The Disk Operating System software is held in roughly 100kbytes and 20k of RAM can easily program the memory workspace for the 1941, but is also used as buffer storage. A handful of other support chips, including an address decoder, complete the quote.

1941 Block Diagram

The 1941 is split into two sections, the Interface Processor or IP for short, which manages the host computer's access functions such as file manipulation and serial bus communications, and the Cache, Disk Controller or DC, which controls the hard disk head and data storage. The 1941 consists four in three

units between the IP and the DC, which often reduces the effective operating speed of the 1941. The IP, IP and Interface Chips will be discussed individually as the series progresses, together with a full SCSI memory map.

Disk Format

In order for the DOS to feel as easy around the disk as not common readers, divide the disk surface as 200 tracks and sectors. The tracks formatted in all track order, listing the first and outermost and track 200 innermost, with the last sector on track 200 being track 200 byte sectors, numbered zero upwards. In fact, in this case and the available space, data resides aligned 4 sectors, where the number of sectors are a power of two. Another one, and then larger, the track is. However, this method in itself would never work because even if the Read/Writing head is positioned on track one or 200, it will take the same amount of time for the disk surface to rotate once. The larger the track, the higher the velocity at the edge, a point under the head, so to counter this the disk is actually written and read from the disk in a linear fashion depending on how far the track is. The data bits are "clocked" in and out at approximately 360,000 bauds on the innermost tracks and 200,000 bauds on the outermost. The track speed is divided into four different zones:

(Frequency Modulation) which involves writing a stream of clock bits with a data bit occurring at between 0.1-1 second to be written. This is important in data storage space and so the TMR was designed to use a self-clocking method called Group Coding Recording, GCR for short. GCR uses an idea from GCR, Prior to being written to the disk, every data byte is converted into a frame which can be read by read as a sync mark and affect reading accuracy. This is achieved by splitting the byte into two halves, in four bit packets, and using a look-up table to convert each half into a frequency.

For example, to convert the eight bit byte 10010100 into GCR, the byte is first split into two half bits to form code words, 1001 and 0100. Using the conversion table these will be sent between TMR0 and TMR1 respectively, and to one completed GCR byte is 10000111. Using Group Coding Recording, no synchronization of any type is GCR enables full error protection after transmission binary bytes (used as a sync mark), and no more than two consecutive bytes since will appear as a 16-bit GCR byte or combination of both. This is for speed increases when clocking bits back into the TMR during a read; however we now have a problem when manipulating the data. The 1941 can address only one eight bit byte at a time, whereas our raw byte is now four bits long. Therefore the conversion routine inside the DCs actually converts four bytes at

| Zone | Track No. | Sector Range | Sectors/track | Clock Rate |
|------|-----------|--------------|---------------|---------------|
| 1 | 0-17 | 0-28 | 21 | 360,000 bauds |
| 2 | 18-29 | 0-18 | 18 | 200,000 bauds |
| 3 | 30-39 | 0-17 | 17 | 200,000 bauds |
| 4 | 40-49 | 0-16 | 16 | 200,000 bauds |

Data Encoding Scheme

Commodore uses speed for a more space efficient encoding method than the individual bits on the disk. The most commonly-used scheme is GCR.

We note that this is the minimum amount of bytes that can be transferred by eight bits per second. A 100kbyte system of 8000 1000 byte sectors will require 1.25Mbytes. Prior to writing data, four eight bit bytes are collected and then converted into four GCR bytes.

GCR Table

| Hex | Binary | GCR | Hex | Binary | GCR |
|-----|--------|-------|-----|--------|-------|
| 000 | 0000 | 00010 | 100 | 1000 | 01001 |
| 001 | 0001 | 00011 | 101 | 1001 | 11001 |
| 002 | 0010 | 00100 | 102 | 1010 | 11010 |
| 003 | 0011 | 00101 | 103 | 1011 | 11011 |
| 004 | 0100 | 00110 | 104 | 1100 | 11100 |
| 005 | 0101 | 00111 | 105 | 1101 | 11101 |
| 006 | 0110 | 01010 | 106 | 1110 | 11110 |
| 007 | 0111 | 01011 | 107 | 1111 | 11111 |

buses, and drivers in less than ten hours. They all wanted a lot confirming of what you'd planned. We just had to tell them you are welcome.

4-Block System: 1000 8-A-S 1000
in Boxes 1000x1000 1000x1000
1000x1000

4 lug wheels. 0000 1000 1010 1010-0000
spur 1000 0000
in 5 lug 0000 0000 1000 1000 1010
1000 1000 0000 0000

in 8 bits QDR 1000000 10000000
1000000 1000000 1000000

Thus our original base might be bytes 304-544-581-591 are actually written onto the disk, whereas in 520-523-543-553-564-565 Reading GCR bytes off the disk is merely the same sequence repeated.

Block 10000 512 175 545 120 148
in Plan GOR 0700000 0711000

an 8-16 GBR. 0010 01011, 11001, 11111
01101 01111, 01111
A-line radiation 0000 0000, 1111 1111, 0000
0111 0111

to illustrate **GOOD FORMS** **TYPE FORMS** **EXERCISES**

卷之三

Section Report

Each sector contains a header, a payload of two main parts—the Header Block and ID Field, which supplies references to the position of the sector and the Data Block of data. Preceding each of these fields is a unique synchronization field of 32 bits, used to identify and synchronize the block and immediately following the block is a short gap which gives the FCB breathing space to allow for the rotation of the spindle. The sector header is written only once during formatting, but the data field, including its sync code, is written every time data needs to be recorded on the disk.

Thunder Block

20 Aug. Attacks *Monilia* on tree stumps. Bites
into the boles until numerous small holes
are made in a large number of them.
A mass of wormy eggs result.

By January 1990, we were in the market identifying firms which adopted the ISO9001 standard. This is because it is always

⑤ Heijde Blaue Cheyenne: This is the
heaviest field cheyenne type created by
joining together the much smaller sections

number and the two th
d) Sector Number: Numbered consecutively from two upwards.
e) Track Number: Position of the track on

In Fig 12D and E2D, these are the foaming, EDI separated and the addition steps. The EDI-MRI-EDI separated solution (Fig 12D) shows 100% EDI at the bottom layer as indicated on the disk. These are the EDI that the EDI uses the hydrolysis of polyacrylic acid and water separation, and the remaining EDI found in section III-B of MRI steps. These are likely broken and coagulating, where the EDI is coagulating the broader boundary area EDI. These reduce the EDI layers from eight but keep a room for GCR conversion. These layers are later reabsorbed again by the EDI after conversion.

(3) Header Gap: ought ought be GCR 10-
2011(011) lines providing the (DOS) and
breaking space between the header and
the body.

Page 8

4.5.4. Math With the DCM's Back in

QData Block ID: Likewise, the QData that follows is a QData Block. Its value is always 102.

of Davis, 2nd. Supreme Court State
of Iowa Black Diamond. For the state
and school corporation the 1878-1879

Q. 20. What have been said at

padding during QCB was seen
in front Seeger Gap. They also appeared

all the help we all will need to do our best and though the DC4 had been a real pain the DC8 just goes so far.

each source to allow for fluctuations in cross section by over a determined change in the thermal temperature which maintains a constant energy source from both the thermal

times to rotate along the y -axis calculated from the length and the

implies not only why the trend would take so long, but also why "big breakthroughs" are occasionally unreliable. Furthermore, we find gap increasing as either does not lead that the law seems to be the much more important mechanism than the gap.

The second is now larger and much more commanding than at first sight. The actual size is indicated by my

| Section | File Name | File Size |
|-------------|-----------|------------|
| New-Block 1 | | 5 bytes |
| Header | | 10 bytes |
| Header-Cap | | 8 bytes |
| New-Block 2 | | 5 bytes |
| Data-Block | AB bytes | 105 bytes |
| Data-Gap | | 4-12 bytes |

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All submissions should be well documented and where possible include a brief by line breakdown of the program together with a list of improvements and a copy of the program should be enclosed on either tape or disk.

All submissions should be sent to the address below. If it is not chosen for publication, then it will be returned to you.

You may not have written any software yourself, but you may have very firm opinions about the world of Commodores and all the standard industries and products. If you do, then put your views or opinions on paper and post them to us again at the address below - you might even get paid for using your name!

All submissions should be sent to:

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Your Commodore
Aegis Specialist Publications
No 1 Golden Square
London W1B 1HL

Online Use Only

Name.....

Postcode.....

Address.....

Postcode.....

Telephone Number.....

Date to contact you.....

Program Name.....

Computer/Memory size.....

Notes required (disk/tape).....

Have you sent the program to another magazine? Yes/No

PLEASE COMPLETE IN BLOCK CAPITALS

Date received.....

Date rec. sent.....

Date checked.....

Checked by.....

Rating.....

Comments.....

Reply sent.....

Ack. received.....

Date printed.....

User received.....

Fee.....

Date fee paid.....

MAX HEADROOM

What
I
want
to
know is . . .

A validation for
the Chairman's
Structures and
Systems as a
recognition for
your unique
talents.



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... why would
anyone
play
anything
else?

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Stuart Cooke takes a look at a new range of disk based budget software.

If YOU'VE EVER WANTED TO BUY A management database or any other type of business software for use with your Commodore computer then you will have noticed at the price. It is not unusual for £100 to be asked for a management DB. A few companies, notably SuperSoft and Management, have produced a few cheap, professional programs in around the £10 mark. Here a new range of disk based budget software is set to hit the streets at a price of only £19. This makes it far cheaper than a great deal of software that is available on cassette.

So what's the catch? It costs only eight quid more than a load out last. Well, there are a few catches - one getting the software out so cheap. There is no fancy packaging. A clear plastic pack is used so that the disks can hang on gate in shape. There are no manuals with the software, the instructions on the packet simply tell you how to load the program. Finally, most of the programs are on line.

Don't let any of the above factors put you off the software though. The lack of instructions is usually - I say usually because one expensive program has no instructions - compensated by several helpful options within the programs. Even though many of the programs are written in Basic they all use a reasonably neat and clean syntax. In fact many of the programs in the range work better and look better than their more expensive competitors.

The name of this new range of software is Load'n'Go. The range is imported over from America. In the States the programs sell extremely well. In comparison with a price tag of around £50 who knows, we may soon be able to buy a Microcomputer at the same price as our computers.

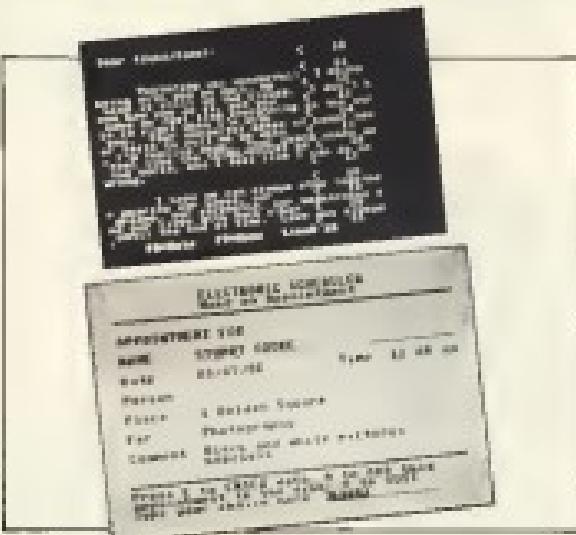
Load'n'Go software falls into a number of different series. The series that is being reviewed over here is the section on the 'Home Management Series'. A list of this range of software could be put to good use in either a small business or at home. HomeManagement is to make life easier for you.

So what's the software really like? The best way to answer this question is to take a look at some of the packages individually.

Love Letters

At £7.99 Master Mail must be the cheapest wordprocessor available. It has many of the functions of its charge counterparts such as search and replace and the ability to set line spacing and margins. It does however lack the more upmarket fancy bits such as page numbering and bulletting and so on. Another

BUSINESS



Wordprocessor is due to be released in a later date that will have all of these facilities plus many more.

As wordprocessor goes this one isn't particularly fancy. It will however require that you load the packages without computing at all. In fact if you're interested with the old pen a selection of business letters (you've lied yet), Home letters (you'll see) and love letters (you'll) are provided on the disk.

Adding it up

Another program in the series is 'Financial Specialist'. This one is a little disappointing. For a start there are no other calculations anywhere. There are no help functions except with the different types of calculation. This means that the only way to figure out what the packages does is actually use it. If you have never come across a spread sheet before then I suggest that you find out what one is and how it works before you look at this program. If you have already used a spreadsheet then you will most likely be disappointed with this package.

Basically 'Personal Planner' is a glorified calculator. You can move numbers in the columns and rows and then perform simple calculations on them. You cannot set up formulas or functions as you can on other calculators. Since a spreadsheet is supposed to help you if you have a lot of figures to work with, I think this program is the bigger let down of the pack. A normal calculator will perform the same job as this program, and a lot quicker.

On Time

If like me, you are always forgetting appointments or forgetting what time you are supposed to be somewhere, you will find 'Meet-and-Schedule' a useful

This program is used for recording all appointments. You are asked for the name of the person who the appointment is for, the month that you could put the whole others appointments onto the program. What time and day the appointment is for, where it is and any comments that you need.

Once you have entered in the details you search for all meetings for a certain person after certain dates. You can see all

on a BUDGET



now try between doses. It is even possible to print details of all recordings at a dinner plate or with dinner people.

How far north did I ever manage without the car?

Money Matters

A couple of financial programs are included in the series. These are the Financial Organiser[®] and Home Finance Organiser[™]. Both disk sales, checkbooks, and analysis lot programs, while the Financial organiser also has a calculator and the Home finance package has a budget program.

One very nice feature on the Financial manager on the Financial is the ability to code names and addresses, with up to 12 for names or 10 for addresses. When you want to print out your labels, you can then print them out for just one group.

A very nice "deal" is the Christmas card lot. For each record you must specify whether you want them colour or otherwise and later on, you can then put a count of how many Christmas cards you will need and then get the computer to print out all the labels.

The calendar is one of those silly PLEASE GIVE ME THE YEAR type of programs. You know, you give it the year and the month and it prints out a calendar for you. One extra feature is the ability to highlight a specific date. This would be great if you could highlight all dates with my birthday of friends but since you can only highlight one day it makes me wonder if it is probably out of the question. When a silly look!

The titles explain the functions of the other programs on these disks and I don't think that I need say anything more about them apart from that they work well. In fact of course either of the chequebook programs, you would know exactly how your finances stand at any time.

Both checkbooks go in certain areas. If you want addresses then go for the Home finance pack, if you want budgeting and cheque books then I think that the Home finance pack is a little better.

The packages are simple but they are well worth buying just.

More Info

If you require more information with your software then you could have a look at the Home and Business Card File disk

This is very similar to the address programs that are mentioned above but it also allows fields for business and telephone numbers. I did have a few problems with this program. For a start there wasn't enough room for some of the addresses than I had to enter and secondly there are in the American format of City State and Zip. Since the programs are in basic, it would only have been a simple task to turn these letters into English. It may even be possible to make the changes yourself.

One better than these is "Basic Thinks a proper database program". In general, I think that you can delete your own fields for data entry. This means that if you wanted to make an address letter you could much with Diff on. If you wanted you could even use the program to keep a catalogue of your interests or stamps. In fact, it can be used on more information about anything that you could put on a card. Using the information on computer means that it is a simple task to find specific details or give out a list etc.

Keeping Tabs

Obviously with disk software becoming so cheap, the number of disks in your collection is bound to grow. How on earth are you going to keep track of them all?

Mark Disk Utilities will solve this problem for you! This program will store information on up to 100 disks. You can search for a specific program and you will be told what disk it is on. You can get a print out of the directory of all your disks. It is even possible to print out a list of all the CDs that you have used. As you are probably aware the CD announcement disk software is a main culprit by identity each disk. If two disks have the same ID, the disk itself may not let you save a file onto the disk, thus rendering the contents.

The list of saved IDs is presented on the form of a grid with letters and numbers being across the top and edge of the grid. It is up to you mark off new disks as you format them.

As well make cataloguing programs there is also a utility program. This will allow you to backup disks onto protected external disk drives.

At a price of only £7.95 this disk is a must for any disk user.

Verdict

Most of the programs available are around the same quality as a good magazine listing. They are all functional and do what they set out to do without any fail.

At £7.95 this software should make a very big impact on the home-based business market, perhaps with the exception of Impact that has already made when it came out at £11.95.

With known, good local software houses at the price may make people start to use their computers for something other than games (that wouldn't be such a bad thing).

WIN PRINT

Eric Deylin has been trying out a real hardware bargain.

WHEN I READ THAT THE 300D U.S.-1 printer claimed letter-quality printing and that the price was less than £100, my immediate reaction was to say the last one of dodges! After unpacking the beast I was somewhat impressed. Prints were had looked very blocky although that when I tried printed my software changed.

Surprisingly the machine does produce letter quality and it does even a very good job. The printer head resembles an old-fashioned stamp. You know the kind, turn the wheel to get the desired class, then set the roller-faced letters on a pad and stamp away. In this novel little printer, the characters are carved on a cylinder which carries four bands of characters. At the back of the wheel is an inked cylinder which rotates to coat the letters as they rotate and each character is pressed against the paper when required to produce very high quality letters. High-tech still has a place for the good old principles presented by Gutenburg?

The location of the characters on the band rollers idea. The characters you get are the ones you're stuck with; no graphics, custom stamps or characters like Commas, symbols, punctuation and single alphanumeric and punctuation.

The paper is forced fed through the printer with no facility for sheet feeding. This means that as a sheet printer for word-processing applications over the high quality, lined paper, indeed a good word processor would be a better choice, owing this machine because it doesn't have a 'paper cut' indicator. When the printer reaches the bottom of a page, the printer tries to print on the paper and the head carries on printing to and fro across the surface. A message with the heading 'no paper' is a page length would overcome this fault.

For most people the main application they would look for is that ability to print out copies of their latest project for a leisurely debugging session. Obviously the problem here is that most savings to

more than a sheet of A4 paper and estimating how many lines to a page would be a nightmare. I found that normal A4 tractor feed paper would fit in the printer reasonably but you can buy paper which is A4 width including the perforations and this is fine for your purposes as long as the paper doesn't slip in the printer's rollers.

Control of the printer is limited to the basic character codes of the Commodore. For example, CR(0x0D) followed by C(0x43) will initiate a line feed and home the printer to the beginning of the next line. CR(0x0D) will be the printer to control line spacing and CR(0x28) will allow double spacing for emphasis.

The number of characters available is limited to 104. This includes all the alphe-

betical, numerical and punctuation characters plus some other codes that it takes up very little room on a disk and the only control is the paper advance and the on/off switch so it is not too complex to use.

My only qualms about this machine are the tendency of the paper to feed to zig and the problem of what happens when the print head wears down. To be



numerical, characters and punctuation marks. In the main those concerned to Commodore's version of ASCII but some of the characters exceed CR(0x0D) very. The main iniquity of this version is that the present tape has an ASCII value of 123 instead of 102 but a little bit of thought should overcome this problem.

Overall, the 300D U.S.-1 is a reasonable appearance of the printer, the quality of the printout is excellent. After a while the letters may get a little faint as the printing of them reduces between letters, but this can be remedied by the simple application of more ink on the roller giving a result unobtainable from the quality of a typewriter.

The speed of the printer is comparable

to that of a dotmatrix. Because the printer has to move up and down the paper frequently, this means that a speed of 10-12 characters per second is the minimum that can be achieved. In real terms this means that a 16-line page of A4 text will take about five minutes to print which is not too bad considering the quality.

The total cost of this printer is about £120 including two sets of ribbons that it takes up very little room on a disk and the only control is the paper advance and the on/off switch so it is not too complex to use.

My only qualms about this machine are the tendency of the paper to feed to zig and the problem of what happens when the print head wears down. To be

fair there is a printer machine which may have been had one of the bands of others and the resilience of the print head seems to prove it fairly long life.

The cost of the printer should be seen in the light of the cost for a reasonable computer. I believe Books sell one for around £300, so if you from the market for a cheap printer with high quality print and you'd willing to accept the 20th Century edge that dotmatrix can't, it's choices then this is definitely a machine to consider. The only other printers at the price are thermal printers and with the cost of thermal paper these days it could be worth while considering a machine with low postage costs attached, in which case this could be the model for

David Castrell helps you get your finances in order with the help of your local

If you're tired of wondering just how much money you've got in the bank and whether you're going to last until your next pay packet comes through, then look no further. The program can be used to monitor all of your incoming and outgoing funds, and not just your bank savings; get the full story where you need it hourly, weekly, monthly.

Introducing

Using Budget 64 you can divide your bank account into a maximum of 20 separate categories, each carrying its own rate of interest and your balance in each category.

before we define what the workings of the program there are going to be changes, we re-examine. The structure of the program is such that when it is applying all full requests, it is keeping all of the available memory. Only 2000 elements. Also from time to time, pauses will occur. This does not mean that the computer has crashed, but was for a few seconds and it will carry on like clockwork caused by the scheduling of the program. The many variables used and the amounts of memory involved.

When the program is first run you are presented with a file screen and a question: WHICH FILE WILL TYPE? If you are starting about this type: B. Delete or backspace your file will be readied later.

Send the magazine will tell you how many subscribers you have. These are the different sections of your book required after the question has been asked plus, plus, then repeat them.

The first category is the set in "MASTER SHIRT" and contains all the others to give a general idea.

Once all the neurons have been entered, the main menu

BUDGET

display up to three pages at
a time. For each page you
have the choice of either
on the screen, the 16x2 Page
Printer or a standard printer.
The printer used when the
program was written was a 16x2
SC 16C dot matrix printer.
However, using other printers
should cause no problems.

Included at the display are
several characters to identify
the origin of each specimen.
Finally, key influenced by the
character of the variation
which you wish to study.

At the bottom of the main menu is 'OTHER OPTIONS'. There are

ACTHREE ACCOUNT Enables you to add or subtract from any of your categories. The process is straightforward and simple.

SAY IT ALL. You can say more than you like at first. The advice of an astrologer should be included to prevent other people from getting involved.

INTER STATE This option can be used if, for instance you wanted to divide the same different categories between two local agents deposited and paid where the forward will be deposited. The other options come with any other arrangement as would be useful.

Options I and P went together with option D. It was

NEW CATEGORIES Type in the name of the new category you want to do any arithmetic on and you can use this option. Finally, to load your file, select F1 at the bottom. You can now

MONEY TRANSFER: Lower your income cycle if you have
more than one job or if you have a second income source.

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Club 128 will appear on CompuServe as their access area open to all CBNET subscribers.

The club will be the focal point for all "business" users of Commodore computers, business 128 utilitaires. The 128 doesn't mean that owners of C64 can't join, in fact the club is open to all Commodore members, though non "business" users are expected to make a great deal of use of it.

Many sections of Computer are due to be "pulled in" in this online area, including the Business business section that is already in existence.

Your Commodore will have a message section within the club area where you will be able to find news and the latest programs that are published in the Magazine.

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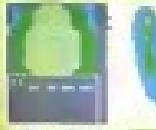
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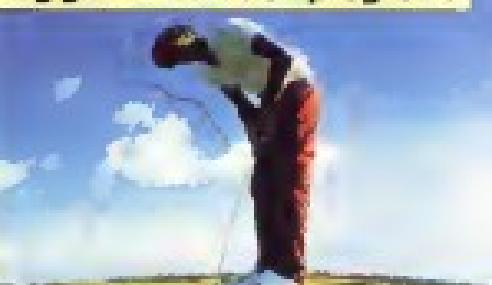
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